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The Role of Market-based Assets in Reducing Corporate Risk

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The Role of Market-based Assets in Reducing Corporate Risk

by

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Dedication

To my family

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The Role of Market-based Assets in Reducing Corporate Risk

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Traditional marketing metrics have excessively focused on assessing marketing activities from a short-term perspective. While research on marketing metrics that might capture the long-run impact of marketing investments on financial performance is at best limited, research focusing on the impact of marketing activities on corporate risk is almost non-existent. This dissertation examines the impact that market-based assets (e.g. brands and channel relationships) and marketing activities that lead to the development of market-based assets (e.g., advertising) may have on enhanced financial performance, reducing risk and managing uncertainty and, ultimately, on enhancing shareholder value. Drawing on research on market-based assets and risk management from finance and strategic management literatures, I argue that market-based assets allow the firm to have more reliable performance, even under uncertain environments. In particular, the first set of hypotheses proposes that strong brands generate enhanced customer preference that secures future earning

streams. The second set of hypotheses argue that brand assets represent a shield for their companies allowing them to protect when facing uncertain market conditions. I tested these ideas in the context of a cross-industry panel of U.S. large companies. The findings of this research provide strong support for the proposed link between marketing assets (specifically those created by advertising investments) and the reduction of corporate risk. Consistent with the idea that marketing-related assets can generate more stable income, I found that cash-flows are less volatile when investments in advertising are increased. Empirical results confirm the positive relationships between advertising investments and firm's market-to-book ratio, suggesting that financial markets associate brand-building activities with enhanced growth opportunities. Moreover, this impact is even stronger when the firm is operating in highly unpredictable environments. These findings suggest that firms with strong brand assets are better prepared to outperform their competitors when market conditions are uncertain. Hence, investments in marketing can enable their firms to be less vulnerable to external conditions.

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CHAPTER 1: INTRODUCTION

A reader perusing the business press during the last few years would have noticed that the main theme of industry analysis has been focused on corporate survival, growth and especially *risk.* The current economic environment has been characterized as rich in opportunities but also marked by a substantial increase in awareness of risk and aversion to it (Bryan, 2002). Even though there have been significant advances in understanding how firms cope with uncertainty, some industry analysts conclude that current measures of a company's ability to handle adversity are inadequate (Thornton, 2002). Despite this dominant concern in the business community, the marketing literature has paid little attention to the antecedents and consequences of risk from the viewpoint of the firm either at the product or firm level. The analysis of corporate risk seems to be the exclusive domain of financial literature, which has emphasized aspects such as financial leverage, and volatility of returns. However, executives believe that other factors may influence risk:

> "We have already weathered the economic volatility better than most other global companies. We believe this is because the power of our brand and… the best way to manage through cycles is to focus on the long term," American Express, News release, September 11, 1998;

> "Great business chess players like Bill Gates or Jack Welch radically reduce the risk of their business by interacting directly with their customers ten times more often than many of their peers," Slywotzky et al (1999) Profit Patterns, p.346;

These companies (American Express, General Electric and Microsoft) must have been doing something right, because they are among the exclusive set of 25

companies that have met analysts' expectations for at least five consecutive years (Fortune, February 5, 2001, p.82*).* On the contrary, in a recent article about failing companies, overdosing on risk was the second most important mistake common to the analyzed cases *(Fortune, May 28, 2002, p.54).*

PURPOSE OF THE DISSERTATION

The purpose of this research is to examine the impact that market-based assets (e.g. brands and channel relationships) and marketing activities that lead to the development of market-based assets (e.g., advertising) may have on enhanced financial performance, reducing risk and managing uncertainty and, ultimately, on enhancing shareholder value.

Traditional models in the marketing strategy field have been focused on understanding the determinants of market share or accounting-based measures of firm performance. In these studies, performance has typically been characterized by its average magnitude, e.g., mean earnings, rather than earnings variability. These models are limiting, because the comparison of expected (or even actual) returns without a measure of its dispersion is incomplete (Bettis and Mahajan, 1985). Risk represents an important dimension of performance that differs from average return. In fact, one of the major criticisms of accounting reports is that they do not include information about the risks of the firm's operations. Because risk is a principal determinant of the firm's equity, this omission is critical (Martin and Petty, 2000).

The framework proposed in this dissertation considers brands, customer relationships, and business relationships as intangible assets of the firm (Srivastava et al. 1998). Managers create shareholder value by identifying and undertaking investments that earn returns greater than the firm's cost of raising money (Martin

and Petty, 2000). Hence, the major determinants of firm's value are its sales growth rate, operating profit margin and cost of capital. A basic premise in Finance is that companies with high corporate risk face higher costs of capital since they need to compensate their capital providers with a higher return. Additionally, it has been empirically shown that firms with more volatile cash flows are more likely to experience internal cash flow shortfalls and permanently forego investment (Minton and Schrand, 1999).

This research identifies two key dimensions of risk: volatility and vulnerability. A key issue for firms is to reduce income volatility because it has been empirically shown that when firms develop a reputation for minimizing earning surprises, they reduce uncertainty for their investors (Chaney and Lewis, 1995). In the finance literature, Chan and Chen (1991) and Fama and French (1995) observed that when a firm's current level of earnings do not appear sustainable, its risk premium increases long before its actual margins deteriorate.

Little attention has been devoted to the impact of marketing on risk reduction and uncertainty management. This is unfortunate because marketing is not taking credit for the value it creates for the firm. To mention an illustrative example, increasing customer loyalty/retention reduces the uncertainty of future sales--which in turn increases the long-term value of the enterprise, as suggested by Srivastava et al (1999).

RESEARCH QUESTIONS

Specifically, I examine two questions: (1) What are the effects of market-based assets on the volatility of business outcomes (financial returns or performance,

and financial value of companies)? and (2) Do market-based assets permit firms to respond more effectively to uncertainty, thereby reducing risk?

In answering the first research question, this research draws on the literature on market-based assets (Srivastava et al, 1998, 1999, 2001) and risk management in finance and management.

Financial models have been the dominant framework in risk analysis. These frameworks argue that a firm's equity holders are in a better position to manage business risks than are a firm's managers. This is because equity holders can invest in a diversified portfolio and eliminate the business risks associated with investing in a particular firm. Contrary to this view, research on strategic management has posited that some firms may be able to insulate their earnings from the downside pressure of market forces in ways that are valuable to investors. Organizational theorists (Miner et al, 1990) have proposed the construct of organizational buffering to include external factors that may insulate the firm from external disturbances. In particular, resource buffering refers to insulation based on access to material resources, information or technology: "the fundamental characteristic of resource buffering is that the organization is insulated because of its access to material goods" (Miner et al, 1990, p.690).

Conversely, the resource-based view predicts that the resources most likely to be a sustainable source of competitive advantage for a firm, are those that are imperfectly (or more costly) tradable, substitutable, and imitable (Barney, 1989, 1991; Dierickx (spelling?) and Cool, 1989). Along these lines, market-based assets are those intangible assets that manifest some of the desired attributes described by the resource-based view of the firm (Srivastava et al, 2001)

Despite their relevance, these models have ignored the potential impact of intangible assets on corporate risk. This research posits that marketing assets are intangible assets that link marketing activities to value creation and *sustained* profitability. I suggest that stronger market channels (Anderson and Narus, 1990) should result in an informational advantage to the firm, protecting it from competitive inroads. Additionally, it is easier to gain acceptance for new products when these new products can all benefit from the same powerful channels, especially if those channels exclude competitive products. The benefits from these relational bonds are multiplied when the firm participates in networks. A key reason for Intel's Pentium microprocessor's successful defense against other competing chips (that were technically similar such as DEC's Alpha and the IBM/Motorola/Apple PowerPC) was its network of users, distributors and software vendors (Srivastava et al, 1997).

Similarly, brand equity reduces the company's vulnerability to environmental threats. An empirical generalization in the Marketing literature is that brand equity leads to a clear asymmetry in the promotional effects; stronger brands are less affected by aggressive sales promotions (by rivals? or by themselves? Please clarify.) than weaker brands (Blattberg et al. 1995). Boulding et al (1994) concluded that unique communication activities lead to increased brand differentiation that subsequently alters the firm's ability to insulate itself from price competition. Additionally, brands provide intangible benefits and strong relationship bonds (Fournier, 1998) that are unlikely to be affected by competitive moves. In sum, brands and channel relationships represent barriers to the entry of new competitors.

Additionally, it has been shown that there is a strong relationship between cumulative satisfaction and consumers' future duration with their providers, leading

to more stable income streams in the future (Crosby and Stephens, 1987). On the cost side, loyal consumers demand much less resources than new customers, so even small increases in customer retention can have a dramatic effect on corporate profits (Bolton, 1998).

The second research question addresses the issue of the impact of marketing investments under uncertain conditions. To answer this question, this research draws on the literature on real options. Real options confer possibilities either to acquire (call options) or divest assets (put options) in the future at prices that may be attractive relative to those faced by parties not holding options. At the heart of the real option perspective is the notion that the values of real resources vary over time and cannot be fully predicted because they depend on the evolution of emerging opportunities. Waiting for the resolution of uncertain contingencies can greatly enhance the value of investments.

CONTRIBUTIONS

The present research contributed to marketing strategy theory in four ways:

First, it identifies the creation of marketing assets based on advertising capital (advertising stock) as an effective business strategy to enhance financial performance and to reduce corporate risk. As discussed in the literature review section, it is not clear which corporate strategies are positively linked to risk reduction.

Second, this research explores the effect of environmental unpredictability on marketing strategies. Even though there is a rich tradition on how consumers cope with uncertainty, there are few insights on managerial decision making in uncertain environments. In fact, most models display an inertial and static view of strategic

marketing that implicitly assumes stability in the studied relationships. This approach contrasts with the dynamic and hyper-competitive environments that most companies are currently facing. As an illustrative example, there are a myriad of articles analyzing market share as a determinant of financial performance, but the moderating effect of uncertain environments is seldom included despite its dramatic impact. This divergence indicates that we should analyze many of our models from a dynamic perspective (Dickson et al. 2000).

Third, this research empirically shows that marketing investments can effectively create intangible assets. The most challenging obstacle to measuring marketing performance is the assessment of the marketing asset (Marketing Leadership Council, 2001). Additionally, Lev and Sougiannis (1999) called for examination of the performance implications of various assets emphasizing the relevance of marketing-related competencies. Following these inquiries, this research sheds light on the measurement of marketing assets that can alleviate the difficulty in measuring intangibles (Barth et al, 2001).

Fourth, this research contributes to the literature in marketing metrics, by proposing risk, an important dimension of performance which has been frequently overlooked. Also, this research highlights the relevance of considering the impact of marketing investments from a long-term perspective.

As for methodological contributions, this research focuses attention on variance-related models whereas most empirical studies look at mean effects. The methodology is based on longitudinal analysis, capturing variations across different firms and changes that emerge over time. To a large extent, previous studies have been limited by the ability to obtain data. In particular, advertising data provided by

COMPUSTAT have posed serious questions on sample-selection bias. This study created an ad-hoc dataset based on the triangulation of several sources that assures the validity of its findings. Additionally, the link between several market-based assets is introduced, leading to a promising new stream of research.

From a practical perspective there is considerable managerial interest in this topic. A survey conducted among leading companies by the Corporate Executive Board in 2001 revealed that two thirds of respondents identified the need to demonstrate the financial impact of marketing as the main driver of interest in marketing performance measurement. Some of the issues I intend to analyze will respond to several Marketing Science Institute' 2000-2002 Research Priorities, such as: short term vs. long term and how CEO/CFO's assess marketing contributions (gold high-priority), value of corporate brand (silver high-priority) and vulnerability to new competitors (bronze priority). Managerial interest is not restricted to consumer-related industries but extends to a variety of sectors interested in understanding the performance implications of investments in marketing. In fact, a survey of the nation's 320 leading technological Chief marketing Officers conducted in the spring 2004 concludes that the measurement of marketing performance and marketing's return on investment is a high priority. Over 80% of the companies surveyed expressed dissatisfaction with the ability to benchmark their marketing programs business impact and value.

ORGANIZATION OF THE DISSERTATION

This document is organized in the following sequence. Chapter 2 reviews the main streams of literature on which this research is based. The conceptual framework including the hypotheses developed from the literature is presented in chapter 3,

followed by Chapter 4's description of the data and methodological issues involved in this research. Chapter 5 presents the results, before concluding the study in chapter 6 with a discussion of the findings, limitations of the study and implications for future research.

CHAPTER 2: LITERATURE REVIEW

The objective of this research is to empirically link intangible assets created by investments in marketing to the reduction in corporate risk. I first discuss the relevance and work done in the area of marketing metrics. Then, before delving into the area of risk management, I review the main contributions of Finance and Management to the conceptualization of risk as a performance measure, highlighting some of the conceptual confusion surrounding existing definitions. Then, I review the empirical findings regarding potential strategies for risk reduction. Moving to the stream of research looking at the impact of Market-Based Assets, I focus on the impact of investments in Marketing on financial markets. Through these concepts, I propose a link between Market-Based Assets and risk developing hypotheses in the following chapter.

MARKETING METRICS

A firm's performance metrics reflect more than just a report of its accounting performance. Performance metrics frequently reflect the firm's strategic priorities and long-term strategies. Despite its importance, approaches to marketing performance both from practitioners and researchers have been criticized because of their poor diagnostic capabilities (Day and Wensley, 1998), their focus on the short-term relative to the long-term (Dekimpe and Hanssens (1995) and their emphasis on perceived performance (Murphy et al, 1996). "Perhaps no other concept in marketing's short history has proven as stubbornly resistant to conceptualization,

definition or application as that of marketing performance" (Bonoma and Clark, 1998, p.1)

Clark (1999) provided a review of the evolution of marketing metrics, from financial measures (sales, profits, cash flows) to a range of non-financial (market share, customer satisfaction, loyalty, brand equity), input measures (marketing audit, market orientation) and output (marketing audit, efficiency/effectiveness) measures. His review suggests the importance of a number of performance metrics but the relationships between the different metrics is not clear. Moreover, the relative importance of these metrics to senior management is low. To date, the most common metrics used for measuring the effectiveness of marketing strategies are increases in sales and market share (Davidson, 1999). However, these metrics provide limited information on the relationship between marketing activities and the firm's financial performance.

Another important drawback of most of the financial measures used in the marketing literature is their short-term orientation (Bhargava et al, 1994). It is critical to capture the value of both long-term customer preference and marketing investments. In fact, a long-run investment perspective is very relevant for marketing investments because increasing investments in improvements in customer satisfaction, brand equity and channel relationships will have lagged effects on profitability. Second, market orientation requires a long-term valuation of opportunities (Kohli and Jaworski, 1990).

A firm's marketing investments are at risk when its investments decisions are based on short-term accounting indicators, which may or may not capture their benefits. Mainstream advertising effectiveness research, sales response analysis, has

resulted in questionable findings. Short-term advertising effects are often drowned by price-promotions. In any case, advertising has long-term, multi-period effects. Examining its impact primarily in terms of short-term (say monthly or weekly) sales response is destined to understate the impact of advertising. Early stage advertising and marketing investments incurred while introducing brands will enable higher levels of profitability and value to the firm over the brand's life for a variety of reasons (Srivastava, Shervani and Fahey, 1998):

- Maintenance advertising expenses can be expected to be lower (differentiated brands have lower sales decay rates), thereby requiring lower expenses per capita sales). Also, the cost of defending brand position will also be lower.
- Distribution costs (e.g., retailer margins, promotional allowances, slotting allowances, etc) will be lower for established and differentiated brands.
- Cost of launching and maintaining breadth and width of brand/product lines will be lower, as will be the cost of launching brand extensions.
- Differentiated brands should result in price and share premiums.
- Differentiated brands (based on launch/cumulative advertising) will have higher advertising and price-promotion elasticities and hence marginal returns.
- Revenues and cash-flows related to differentiated brands will be less volatile, especially in economic down-turns (this reduces the risk to the firm).

In effect, there is a need to recognize that early and cumulative advertising is important for building brands. Once differentiated brands have been developed they can be leveraged to provide superior marketplace performance in terms of higher

revenues (share/price premiums) and/or lower sales/distribution and service costs, as well as lower volatility and susceptibility to competitive moves and economic conditions. Thus, "marketing investments" represent strategic options that can provide multi-period payoffs.

Unfortunately, because the long-run impact of advertising is not well documented and because all short-term analyses suggest that advertising has barely noticeable effects (compared to price promotions) marketing budgets have steadily migrated from advertising to price-promotions. Additionally, in times of economic need, a reduction in advertising budgets is often perceived to be the best solution to boost profitability, as highlighted in the MAX conference on Improving Advertising Budgeting (Donath, 1998). In fact, creating long-term value future profits might involve sacrificing immediate cash flows to create a greater cash-generating potential for the future. Day and Fahey (1988) proposed that shareholder value is the most relevant metric to value marketing strategies. Additionally, inquiry focused on shareholder value could afford greater understanding of how marketing activities relate to valuation (Varadarajan and Jayachandran, 1999).

RISK AS A RELEVANT METRIC

Some academics have lamented the excessive focus of marketing analysis on short-term measures such as market share or ROI (Anderson, 1982). Corporate risk has a dramatic impact on corporate performance for several reasons. Day and Fahey (1988) concluded that "risk is the most important component of shareholder value to get it right for it can change the estimated value more than any other variable" (p.48). Since investors are risk averse, they will pay a premium for the reduction of uncertainty. Future cash flows that can be forecasted with greater expected certainty

will not be severely discounted, and this will be reflected in a higher stock price (Day and Fahey, 1988)

Low business risk permits firms to acquire factors of production at lower costs (especially capital funds) and to operate more efficiently. If external capital can be borrowed at low costs, the implication is that more projects will be attractive in terms of capital budgeting. Moreover, if internally generated cash flows are highly variable, it is likely that the company will permanently forego investment. This effect has been empirically documented by Minton and Schrand (1999) to show that companies with high variable cash flows exhibit lower levels of capital investment.

Variability in performance increases the probability that a firm will default on both its explicit and implicit commitments to customers, suppliers, and stockholders (Cornell and Shapiro, 1987). Performance variability affects the chances of firm failure. A simple-random-walk model of the accumulation and depletion of organizational resources suggests that for a given stock of resources, firms with more variable performance are more likely to exhaust their resources and fail (Levinthal, 1991). Thus, shareholders are less likely to trust companies exhibiting highly unstable earnings. To counter shareholder fears companies may rely on hoarding cash and securities so that liquidity might mitigate uncertainty in performance – much as one might use inventory to manage uncertainty in demand. Unfortunately, while this strategy may mitigate business risk, it is not a very effective use of capital and dilutes financial performance (returns).

Income stream variability has also been shown to negatively influence subsequent performance irrespective of a firm's previous performance levels. In fact, Amit and Wernerfelt (1990) find that increases in risk negatively impact shareholder

value. More recently, Minton et al (2002) found cash flow volatility to be negatively related to future cash flows.

Risk as vulnerability is inversely related to the concept of sustainable competitive advantage that represents a distinct dimension of performance. According to Mueller (1986), it is not evident that profit existence and profit persistence are driven by the same factors. Based on an extensive meta-analysis of over 300 studies focusing on firm performance, Capon, Farley and Hoenig (1990) conclude that:

> "There is a dearth of genuinely dynamic analysis that tracks organizations as they evolve over time. ....research is almost entirely focused on performance as a dependent measure at a single point in time. We need more work on how successful firms stay successful, how unsuccessful firms become successful, and how successful firms become unsuccessful." (p. 1158).

Therefore, insights on how firms are invulnerable to competitive and uncertain environmental forces will add a new perspective to traditional models. Finally, we note that risk incorporates the long-run perspective inherent in the marketing concept that is not reflected in traditional measures such as ROI (Anderson, 1982).

CONCEPTUALIZATION OF RISK

There is considerable disagreement in the (which? marketing, finance, other areas?) literature over the concept and measurement of risk, resulting in multiple measurements of risk. In the finance literature, risk has a precise definition referring to the probabilistic distribution of future market returns. However, in management, the term risk has no single meaning, but frequently refers to managers' assessments of decision consequences (e.g., Bettis 1983). Strategic management researchers (Bromiley et al. 2001) also use the term risk to mean "down-side unpredictability of

business outcome variables such as revenues, costs, profit, market share and so forth". Therefore, risk is associated to the notion of "perceived loss".

With respect to managerial practice, Baird and Thomas (1990) surveyed financial analysts to determine the importance of several risk definitions. The possible definitions offered were: lack of information, risk as bankruptcy, variance in returns and loss probability, size of possible loss and below target returns. For financial analysts, the most important definitions were size of loss, loss probability and variability of returns. Next, I discuss six major measurements of risk:

1. Risk as variance

Firms that have higher variance or volatility in their cash-flows or earnings are considered riskier (Froot et al. 1993). In the marketing literature, Bharadwaj and Menon (1993) analyzed the impact of several strategic variables on risk/return. However, while they do not specify their measurement of risk, their underlying conceptualization of risk refers to variation of returns. Even though volatility of returns is frequently used as an indicator of risk by accounting strategy researchers, there are two concerns regarding this measure of risk (Ruefli, 1990):

- This measure of variance confounds upside gains and downside losses. Because managers view risk in terms of losses, and not uncertainty, a variance measure does not capture how managers think about risk.
- Variance data create spurious negative relationships in regression models that predict average performance, particularly if data contains temporal trends (It would be helpful to provide an example that illustrates this point).

2. Downside risk

Research in psychology shows greater support for risk construed as loss or downside potential. Miller and Reuer (1996) presented three categories of organizational downside risk based on the concept of lower partial moments. Aaker and Jacobson (1990) conceptualized risk in Marketing as the probability of a loss or failure to attain a certain return. This measure of risk is an *ex-ante* descriptive measure of managerial risk-taking.

3. Volatility of market positions

Collins and Ruefli (1992) created an ordinal measure of risk. This measure directly addresses the issue of gains and losses. Favorable events yield an improvement in rank, whereas unfavorable events are those that result in a loss of rank. Similarly, Woo (1987) proposed a measure of business share instability, calculated from fluctuations around each firm's market share time trend. However, this ordinal measurement has several problems (Bromiley et al. 2001). Ordinal reasoning assumes clear industry boundaries and may confound risk with changes in the spectrum of industry competitors. Further, these measures do not enable comparisons across industries. In addition, they reflect not only the changes in firm-specific performance but also the volatility of the entire industry. {This conclusion seems less clear, because variability that affects the entire industry does not change the average rank, or variability among ranks; hence, volatility in the industry's performance is "controlled for" by using ranks. The other statements regarding inability to compare these indices across industries are valid complaints, but this statement is not well supported, as this point). Finally, these measures generally require aggregation over time, with the assumption of constant risk over time.

4. CAPM Beta

In the finance literature, the Capital Asset Pricing Model (CAPM) is one of the most frequently used to represent the risk construct (Fama, 1970). Under CAPM, a firm is considered riskier to the extent that its stock returns have greater variance than the underlying market factors. In this view, the covariance of a firm's returns with market factors is a measure of risk that, in turn, affects its market prices. Despite the elegance of this model, strategy researchers critiqued its theoretical and measurement underpinnings. Regarding its conceptual aspects, (Bettis 1983) stressed that, according to CAPM, managers should not manage unsystematic risks (those associated with a particular company), which is inconsistent with the tenets of corporate strategy. A specific case in point is the potential entry of a new competitor because the variance caused by this event can be diversified away. However, the literature in strategic management is replete with discussions of the importance of managing entry barriers because the height of these barriers influences the profit potential of firms. Along the same lines, (Dickson 1986) concluded that the CAPM has little to offer to managers responsible for planning and managing a firm's new product introductions because it is not possible to, a priori, specify the variance of a new product's performance over time.

In empirical studies CAPM has been severely critiqued. In a seminal paper, Fama and French (1992) found no relationship between a firm's beta and its returns. In fact, a new stream in financial economics, known as the "death of beta" (Nuñez and Cano, 2002; Ruefli et al. 1999) has emerged. In sum, the general consensus is that beta may be an unreliable measure of a firm's risk premium (Chatterjee et al. 1999).

5. Default Risk

Another measure for risk construct in finance is the risk of default or bankruptcy (Altman, 1968). This risk definition is useful in dichotomizing strategic decision situations where corporate survival is at stake. The measure is Altman's Z score (Altman, 1985)

6. Variability of Analysts' Forecasts

If a number of individuals forecast the earnings per share for a given firm, the extent to which they disagree is a reasonable proxy for the uncertainty associated with the firm's future income stream. In the accounting literature there have been several studies confirming the validity and reliability of this measure. Barron and Stuerke (1998) present evidence that dispersion in earnings forecasts can be used by market participants as valuable information and a proxy for uncertainty about firms' future economic performance. Additionally, it has been shown that analysts' risk perception is a valid and reliable measure for a stock's true market risk (Farrelly et al 1985). Moreover, this risk perception is more predictive than historic beta in predicting future beta. In the Strategy area, several researchers have used this measure of risk, such as Deephouse and Wiseman 2000; Miller and Reuer (1996) and Palmer and Wiseman (1999) to analyze the impact of several corporate strategies such as diversification or globalization on corporate risk.

STRATEGIES FOR RISK REDUCTION

Parallel to the debate on the correct definition of risk, there is also debate on the sources of systematic and non-systematic risk (Lubatkin and Chatterjee, 1994;

Lord, 1996; Rosett, 2001). Additionally, a basic premise in finance is that equity holders can invest in a diversified portfolio of equity investments and eliminate the business risks associated with investments in a particular firm. Hence, it is not clear which are the most effective strategies for risk reduction at the corporate level.

There are a variety of risk management mechanisms that can be used to reduce the probability that a firm will experience financial distress. In the accounting literature, Farrelly et al (1985) found that seven accounting measures accounted for 79% of the variation in the average risk perception of the financial analysts. The most influential factors are: leverage, variability in earnings and asset size. Consistent with this conclusion, the most commonly-used strategies are:

a) Financial hedging contracts: these instruments are effective to reduce risks associated with short-term movements in interest rates or exchange rates.
b) Investments in real options: real options come into existence through the opportunities created by the firm's strategic investments. Specifically, growth options are investments that enable the firm to capture value by expanding if market conditions prove to be unexpectedly favorable.
c) Changes in capital structure because a firm with a higher debt burden will have a higher probability of financial distress than a firm with lower debt burden.
d) Diversification into other businesses: a firm that diversifies increases the number of its sources of cash-flows, and to the extent that these cash-flows are not highly correlated over time, diversification may reduce the probability that problems in one particular business will put the entire firm at risk. Even though the theory underlying this rationale is borrowed from

modern portfolio theory, empirical studies show a curvilinear relationship between diversification and risk (Palich et al, 2000), suggesting that risk is best minimized by some midrange level of diversification.

e) Geographic diversification: the rational is parallel to business diversification because uncorrelated cash-flows in multiple countries are expected to generate stable earnings. However, empirical studies indicate that internationalization increases firms' exposure to economic factors and turbulence, resulting in an increase in earnings volatility (Goldberg and Heflin, 1995; Reeb et al (1998) and higher dispersion in analysts' forecasts (Duru and Reeb, 2002).

Few studies have suggested that risk management may be related to firm-specific competitive advantages. Using systematic risk and total risk (computed as the variance of daily market returns over the year), Veliyath and Ferris (1997) concluded that the pursuit of strategic differentiation can also insulate some strategic groups from the market-wide fluctuations on which systematic risk depends.

The role of investments in R&D on firm risk is controversial. Despite its uncertain outcomes, some authors propose that a company investing heavily in R&D may exhibit greater dynamic efficiency or more flexibility that its competitors in adapting to changes in input prices and technology (Miller and Bromiley, 1990). The final outcome of investments in R&D is the introduction of new products, but again the relationship between risk and new product introduction is not clear. Chaney et al. (1991) find that firms introducing new products have a greater beta, but their interpretation is that new products are a necessity of firms with higher beta.

Furthermore, there is a negative relationship between the number of products introduced over the 10-year period and beta. Therefore, "although the sample of firms introducing new products has a larger risk profile than the market, the relationship between risk and new products seem to reverse when the number of introductions is considered" (Chaney et al. 1991, p.593). Along the same lines, Roberts (1999) analyzing the pharmaceutical industry, found that innovative propensity influences the persistence of abnormal profits. Thus, innovation may result in persistence of high profits even in highly competitive environments. Firms sustain above-normal profits because of their rapidly changing product portfolios that enable them to hold temporary monopoly positions corresponding to new products introduction.

As for the impact of marketing-related investments on risk, the literature is surprisingly limited. Aaker and Carman (1982) suggested that firm's over-advertisement can be explained by the desire to reduce risk. Also, Bettis and Mahajan (1985) divided the sampled firms in four clusters based on combinations of risk-return. They found that the cluster of firms exhibiting the highest performance and moderate level of risk have highly differentiated products based on the highest level of R&D and advertising expenditures of all the four clusters. Following the lead of these inquiries, Jacobson (1988) concluded that firms with higher marketing expenditures have more persistent returns. The rationale provided by Jacobson is that higher marketing expenditures allow a firm to differentiate its product from competition. The lack of substitutes in the eyes of the consumer makes it less likely for price competition to drive return down. Megna and Mueller (1991) investigated four industries with high levels of profit persistence: toys, distilled beverages,

cosmetics and pharmaceutical industries and find that advertising is an important strategic variable in all four industries.

In sum, research findings relating the impact of corporate strategies on risk reduction have been limited. This is because financial literature has dominated the research on risk but has avoided the issue of unsystematic risk (linked to individual firm characteristics) because investors have the ability to diversify this risk away. Still, there are few corporate characteristics that have been perceived to reduce of corporate risks, such as low financial leverage and business and international diversification. However, all these strategies involve other complexities that may also result in risk increases. The basic underlying rationale for these strategies is their potential ability to generate stable income streams. The only intangible asset under examination is investments in Research & Development (R&D). Even though R&D capabilities have a positive impact on the mean of profitability measures, their effect on reducing the variance of such measures has not been empirically shown. The specific linkage between marketing investments and risk reduction has been not examined, although there is a link between industries with high advertising expenditures and persistence of high profits.

SUMMARY

Traditional marketing metrics have excessively focused on assessing marketing activities from a short-term perspective. The problem with this approach is that the impact of marketing activities and investments with long-term payoffs is not fully captured. While research on marketing metrics that might capture the long-run impact of marketing investments on financial performance is at best limited, research focusing on the impact of marketing activities on volatility and vulnerability of

financial performance is almost non-existent (Srivastava, Shervani and Fahey, 1997). Even though risk is a relevant measure for several disciplines, there is considerable disagreement regarding its conceptualization and measurement. Finally, previous research does not offer definitive conclusions on which factors or business strategies are more effective in reducing risk. In particular, empirical evidence seems to suggest that some intangible assets such as Research & Development may increase corporate risk.

CHAPTER 3: CONCEPTUAL FRAMEWORK AND HYPOTHESES

The major tenet of this research is that market-based assets provide long-term differentiation, thereby reducing the risk or volatility associated with future growth expectations. Following this conceptual overview, the next section provides some key definitions of the constructs studied. The following describes the financial impact of advertising investments. The last section of this chapter analyzes the mechanisms through which advertising may reduce the unpredictability of future business outcomes.

OVERVIEW OF THE DISSERTATION

This dissertation examines the link between advertising and market-based assets and the volatility and vulnerability of current and future business outcomes. As summarized in Figure 1, advertising investments are expected to contribute to the development of corporate reputation and market-based assets (e.g., brand/channel relationships) which can be leveraged to yield superior marketplace performance (e.g., price premiums, superior market share) which in turn will affect financial performance (i.e., higher returns or cash flows and lower risk or volatility and vulnerability of cash flows). Finally, superior financial performance is expected to result in higher market valuation of the company.

Most of the extant marketing metrics literature relates marketing mix variables (advertising and other activities like promotions) to building and leveraging market based assets (the boxes within dotted lines in Figure 1) with some recent emphasis on returns. However, there is limited attention paid to the impact of marketing (including

advertising) investments on risk. This dissertation focuses on the impact of advertising investments on returns/cash flow and on company value, as well as upon the variability or volatility of these performance measures.

The model is depicted in Figure 1 by showing how advertising represents the critical input in building market-based assets. Advertising is necessary to communicate the product availability, understand its characteristics, add emotional value and build brand image (for a review of how advertising works, see Vakratsas and Ambler, 1999). Market-based assets are, by definition, leveraged in the market place, by consistently generating higher income that is resilient to competitive actions. A review of the literature supporting the view that market-based assets can isolate the firm from several sources of uncertainty is provided in Table 1.

Following the rationale of Figure 1, the next link corresponds to the impact of market-based assets on corporate profitability measured by accounting indicators. As for advertising and other brand-related measures, their effect on accounting performance measures is well documented. In fact, most of the research in the marketing literature examines the impact of advertising on sales and profitability at the brand level and the duration of this effect. In a special issue of *Marketing Science* focused on empirical generalizations in Marketing, Leone (1995) concluded that advertising effects on sales disperse after six to nine months. Contrary to this view, Dekimpe and Hanssens (1995) argued that the effects of advertising did not dissipate within a year. At the corporate level, a meta-analysis on 320 studies of determinants of short-term of financial performance concluded that advertising is positively related to firm profitability (Capon et al, 1990). Increasing advertising will normally generate a sales increase but the relevant question is the effect of these incremental

sales on corporate profitability. Sales growth increases profits only if the operating margin of the additional sales covers the higher costs and investment incurred in achieving the growth (Rappaport, 1998). The relationship between advertising and return on assets is still open to empirical testing because there are very few studies in the area. Bettis and Mahajan (1985) showed that successfully diversified firms (e.g. outperformers in terms of return on assets) differ from others on some managerial dimensions, including high levels of research and development and advertising expenditures.

Moving to the next area of performance assessment, recent research has provided consistent evidence of the positive impact of marketing actions on financial valuation. These studies are discussed in the last section of this chapter. However, past research has focused on the mean effects, whereas the volatility (or its inverse, persistence) of high valuations for marketing investments in financial markets has remained unexplored.

Therefore there are three important gaps in the logic of Figure 1 that this dissertation attempts to address: a) the impact of market-based assets (as captured by advertising capital) on the level and volatility of financial performance (as captured by cash flows), and b) the effect of these assets on financial valuation in turbulent environments.

The next section defines some key variables and the subsequent section specifies and justifies relevant research hypotheses. In the first set of hypotheses, I argue that strong brands generate enhanced customer preference that secures future earning streams. The second set of hypothesis proposes that brand assets represent a

shield for their companies allowing them to protect when facing uncertain market conditions.

KEY DEFINITIONS

Risk

The conceptualization of risk adopted in this research includes the short-term volatility of business outcomes and the vulnerability of the firm's competitive position (Srivastava et al, 1998). Volatility indicates short-term variability of business outcomes, representing the reliability of firm performance (Sorensen, 2002). Investors are normally averse to earnings surprises because they may indicate potential information asymmetries between managers and stockholders. Vulnerability refers to the inability to buffer corporate earnings from the downside pressure of competitive actions and other market forces. A firm is less vulnerable if it has some competitive advantages able to isolate its earnings from macroeconomic and firm-specific disturbances.

This multidimensional conceptualization of risk is innovative and accommodates the prevalent notions of risk in both finance and strategic management. Traditional notions of risk define it as variability of financial outcomes (Aaker and Jacobson, 1987), whereas more recent contributions have introduced the concept of strategic risk as driven by imperfections in resource markets (Chatterjee et al. 1999) and sustainability of competitive advantages (Srivastava et al. 2001).

Market-Based Assets

In the recent years, both marketing theorists and practitioners have recognized that customers and channels represent actual assets that must be cultivated and leveraged. In two landmark theoretical contributions, Srivastava et al (1998, 1999)

conceptualized these assets as *market-based assets* because "they arise from the commingling of the firm with entities in its external environment". These authors identified two types of market-based assets: (a) relational, corresponding to the outcomes of the relationship between a firm and key external stakeholders and (b) intellectual, or the types of knowledge a firm possesses about the environment.

Relational assets are outcomes of the relationship between a firm and key external stakeholders, including distributors, retailers, end customers, other strategic partners, community groups and even governmental agencies (Srivastava et al, 1998). An increasing body of research has empirically showed these assets are leading indicators of both financial performance and shareholder value. Customer satisfaction is positively related to shareholder value (Anderson et al, 2004, Ittner and Larcker, 1998), and similar relationships have been shown for the addition of new channels (Geyskens et al, 2002; Lee and Grewal, 2004; Srinivasan, 2004), and superior corporate reputation (Roberts and Dowling, 2002).

As for intellectual assets, they refer to superior marketing knowledge that provides a core competency consisting of skills, systems and information able to identify market opportunities and to develop marketing strategies. Both the marketing function and a general culture of market orientation have been linked to several financial performance measures (Hitt et al, 1988; Nohria and Gulati, 1996; Kerin 1992).

Advertising

This dissertation focuses on brand assets because of their relevance that has attracted considerable attention not only in the Marketing domain but also in Accounting and Finance. In fact, several studies have examined the value relevance

and reliability of brand assets (Barth et al, 1998; Chan et al, 2001; Kallapur and Kwan, 2004). A brand name is an intangible asset because it meets the following criteria (Donaldson, 1992):

1. It generates, or plays a key part in generating actual and expected earnings. In anything except the short run, they must be cash earnings, not merely accrual.
2. It is saleable at a predictable price, or it is subject to systematic valuation.
3. It is something a company would spend money to acquire if it does not have them, or to replace or maintain if it did have them.

Despite their relevance, there is not a clear consensus on how to value brand assets. Some researchers suggest intangible valuation be based on the market value of a firm (Simon and Sullivan, 1993). However, this approach may be based on circular logic. This circularity arises from the general assumption that market prices are determined by reported financial variables, so such prices cannot be logically used to determine the value of financial variables (Lev and Sougiannis, 1996). The expenditure assets value technique relates the value of an asset (in this case advertising expenditures) to the future cash flows it generates. Evidence for the asset value of advertising is mixed. Whereas some research supports the notion of advertising as an asset (Chauvin and Hirschey, 1993; Graham and Frankerberger, 2000), others do not find those results (Erickson and Jacobson, 1992; Aaker and Jacobson, 1994). The last methodology used to value brand assets is based on the capitalization of advertising expenditures, in a similar fashion than tangible assets. This is the method adopted in this research.

THE RELATIONSHIP BETWEEN ADVERTISING CAPITAL AND THE REDUCTION IN VOLATILITY OF FINANCIAL PERFORMANCE

To date, much of the research on the impact of intangible assets on corporate profitability has focused on the asset created by investments in Research & Development and its influence on financial performance (Bosworth and Rogers, 2001, Bharadwaj et al 1999; Chan et al, 2002; Cockburn and Griliches, 1988; Lev and Sougiannis, 1996; Hall, 1993; Megna and Klock 1993). These studies consistently showed that firms' market values are positively related to R&D outlays.

Some of these contributions consider new product introductions (Bayus et al, 2003) or patents as indicators of the technological asset, concluding a positive impact on stock returns. However, new product introductions are indicators of successful outcomes of R&D investments, excluding the effect of failed projects. This is a key issue for research in accounting because the Financial Accounting Standards Board identifies the degree of uncertainty of future benefits as a criterion in the determination of whether a given cost should be capitalized or expensed. Indeed, recent research found that R&D intensity is positively associated with return volatility (Kothari et al, 2002). Specifically, in a regression of future earnings variability on R&D and capital expenditures, the coefficient on R&D is about three-to-four times as large as that on capital expenditures, suggesting important economic differences between these investments. Using other indicators of risk, it has been shown that analysts exhibit greater disagreement about year-ahead earnings for R&D intensive firms than for others (Barth et al, 2001). Moreover, post-investment reported earnings are more highly variable for high R&D firms than for firms with lower R&D levels (Chambers et al, 2002). In conclusion, investments in R&D are likely to increase the

growth opportunities of the firm at the cost of decreasing the predictability of future income streams.

In contrast, the impact of market-based assets translates to much more predictable income streams. As far as satisfaction is concerned, it has been shown that there is a strong relationship between cumulative satisfaction and consumers' future duration with their providers, leading to more stable income streams in the future (Crosby and Stephens, 1987). On the cost side, loyal customers demand much fewer resources than new customers, so even small increases in customer retention can have a dramatic effect on corporate profits (Bolton, 1998).

The basic mechanisms explaining the effect of brand equity on both the mean and variability of several financial measures is explained by the following six factors:

1. Differentiation
2. Increase in Sales
3. Price Premium
4. Advertising Efficiency
5. Lower Distribution Costs
6. Resilience against competitors' promotional pressures

Differentiation

Advertising is critical for differentiation (Kirmani and Zeithaml, 1993). An illustrative example comes from the automotive industry. The latest J.D Power and Associates report shows that average initial quality for U.S.-built autos has improved 24% in the last five years and that the gap between the best and worst performers is down from 212 defects per 100 vehicles in 1998 to 53 in 2003. Hence, reliability is

decreasing in importance as a sustainable basis for differentiation. Consumers perceive brands with substantial investments in advertising to be more differentiated, because of the value added (intangible, psychologically-based advantages) rather than because of functional properties (Jones, 1999). An important role of Advertising is to create positive brand associations and attitudes readily accessible in customers' memory (Farquahar, 1989). In a similar vein, Mela et al (1997) showed that reduction in advertising made brands more substitutable reducing their distinctiveness.

Increase in Sales

Extensive research analyzing the impact of advertising on sales provides an empirical generalization that the short-term elasticity on own brand sales is positive but low. According to the meta-analysis conducted by Assmus et al (1984), the average short-term elasticity is 0.22. As for long-term effects, it has been shown that advertising has strong trend-setting effects on sales (Dekimpe and Hanssens, 1995) {It would be useful to add discussion of whether or not advertising content includes price promotions vs. non-price content. Sales promotions are often communicated by advertising, with higher own-brand elasticities than those reported above. Thus, it may help to clarify the extent to which this literature includes mainly advertising that does not stress sales promotions).

Price Premium

Some authors suggest that the definition of brand equity is the incremental cash-flow from the product with the brand name compared to that without the brand name (Leuthesser, 1998). Consistent with this view, it has been found that non-price advertising decreases price sensitivity (Kaul and Wittink, 1995) and strong brands

make consumers less sensitive to price increases (Ailawadi et al 2003, Sethuraman, 2000). Also, a high-equity brand will increase its sales significantly when it cuts its price (Sivakumar and Raj, 1997).

Lower Marketing Costs

Slotting allowances are related to the retailer's effort required to push the product and it has been shown that these expenditures are lower for highly-advertised brands (Lariviere and Padmanabhan, 1997). Investments in advertising for a flagship brand generate positive spill-over effects, lowering advertising expenditure for brand extensions (Smith and Park, 1992). Recent research suggests a reciprocal spillover effect because the advertising of brand extensions produces significant spillover effects influencing the choice of the parent brand (Balachander and Ghose, 2003).

Resilience against competitors' promotional pressures

One of the empirical generalizations in marketing is that brand equity leads to a clear asymmetry in the promotional effects, so stronger brands seem to be less affected by aggressive sales promotions of weaker brands (Blattberg et al. 1995). Boulding et al (1994) concluded that unique communication activities lead to increased brand differentiation that subsequently alters the firm's ability to insulate itself from price competition. Additionally, brands provide some intangible benefits and even strong relationship bonds (Fournier, 1998) that are unlikely to be affected by competitive moves.

H1: Advertising has a positive effect on corporate profitability.

H2: Firm's advertising is negatively related to the volatility of its profits.

THE RELATIONSHIP BETWEEN ADVERTISING CAPITAL AND MARKET CAPITALIZATION (COMPANY VALUE) UNDER CONDITIONS OF UNCERTAINTY

As discussed earlier, the long-run investment perspective is important for marketers because marketing investments, such as improvements in customer satisfaction, creation of brand equity and nurture of channel relationships have lagged effects on profitability. Because these effects are not reflected in short-term accounting performance measures, there has been a recent stream of research analyzing the effect of investments in marketing on financial capital markets. The impact of advertising investments on the market value of the firm has been analyzed using two alternative methodologies:

Event-Study Analysis

Several studies have analyzed the immediate stock-market reaction to marketing-related strategies, such as new-product announcements (Chaney et al, 1991), perceived quality (Aaker and Jacobson, 1994), brand extensions (Lane and Jacobson, 1995), and brand attitude (Aaker and Jacobson, 2001). All these studies indicate a positive relationship between a firm's marketing activities and contemporaneous changes in its shareholder value.

According to the efficient markets hypothesis, the stock price provides an unbiased estimate of discounted future cash flows of the firm (Fama, 1970; Jensen, 1978). However, there is some controversy about this measure's validity because it is inherently noisy and investors have incomplete information available to investors. This lack of reliable information is especially evident for intangible assets, because of

the inherent difficulty in assessing them. Not surprisingly, financial analysts expend greater effort to follow firms with more intangible assets (Barth et al, 2001).

Longitudinal Studies

Longitudinal studies use a panel of firms over time to measure the impact of certain factors on firm value.

Barth and colleagues (1998) concluded that a firm's brand value as estimated by Interbrand is relevant and sufficiently reliable to be reflected in its share prices. Brand value estimates are significantly positively related to prices and returns, incremental to the explanation provided by accounting variables. Using the same valuations by Interbrand, Kerin and Sethuraman (1998) found that firms with higher accumulated brand value have higher market to book ratios. The functional form of this relationship is concave, reflecting a threshold. Hence, increases in a firm's market to book ratio may be relatively modest if a firm has a high accumulated brand value. An asymmetric effect was observed in the directional change in firm's accumulated brand value and market to book ratio. An increase in a firm's brand value is reflected in an increase in its market to book ratio, but decreases in a firm's brand value exhibit little reaction to decreases in its market to book ratio.

Graham and Frankerberger (2000) empirically showed that changes in advertising expenditures are associated with earnings up to 5 years (depending on the industry), following the year of the expenditure (advertising showed the most persistent effect in consumer and industrial products and the least persistence in the sales and services industries. In conclusion, the intangibles assets generated by advertising expenditures appear to be positively related to market value.

However, the data source used in the previous literature is based on self-reported figures included in the financial information reported by COMPUSTAT. There are several problems related to this source resulting in sample selection bias. Most firms do not report advertising expenditures and there is not a clear definition of what specific expenditures are included in the advertising category. Conversely, this research uses information provided by Leading National Advertisers based on sources external to the advertisers and the time framing is more recent. Even though there are methodological differences between this dissertation and previous research, the main theoretical reasons justifying a positive relationship are the same:

1. Advertising provides elements of differentiation that make the advertised brands less vulnerable to competitive prices. Accordingly, advertising creates a competitive advantage that is reflected in the enhanced future cash-flows.
2. Advertising provides information that is highly valued by financial analysts and investors.

Investments in advertising provide information on the expected value of the company, considering advertising as a basic enhancer of future-period cash flows and therefore having a positive impact on market value (Chauvin and Hirschey, 1993; Mathur and Mathur, 1995). From the perspective of behavioral finance, recent research has evidenced a preference for visible, brand-name stocks in individuals' decisions to hold stocks (Frieder and Subramahanyam, 2003). Therefore, advertising creates an economic asset reflected in market value but not accounted for in book value.

H3: Firm's advertising is positively related to its market-to-book ratio.

The external environment continues to play a key role in explaining the value of current strategies. Moorman and Slotegraaf (1999, p.241) suggest that the firm's challenge is to maximize the "fit between current investments (and the capabilities or options they create) and the firm's future competitive threats and opportunities". Intellectual market-based assets can provide a superior advantage by identifying marketing opportunities. To date, most research on the impact of market-orientation has agreed that firms with high market orientation exhibit superior responsiveness in turbulent environments (Slater and Narver (1994); Jaworski and Kohli (1993).

The capability of strategic flexibility is critical to risk as a performance dimension, because flexibility makes an organization less *vulnerable* to, or better able to respond successfully to, unforeseen environmental changes.

An illustrative example of how marketing assets can reduce strategic risk is the strong relationship Procter & Gamble has developed with the large retailers. Identifying the increasing power of large retailers such as Wal-Mart and Target, P&G introduced a vendor replenishment system based on electronic data interchange with its major customers. In addition to providing a valuable service to the retailers, the system provided a solution to insulate itself from the practice of large retailers of transferring demand uncertainty onto suppliers (Chatterjee et al, 1999).

Strategic flexibility refers to the critical interdependencies between the flexibilities in a firm's creation technologies on resource for developing, producing, distributing and marketing products (Sanchez, 1997). The basic mechanisms that explain the effect of marketing and, more specifically, brand investments on strategic flexibility are as follows:

a) Avoiding the need to pioneer uncertain markets.

b) Facilitating consumer adoption of new products.

c) Reducing the cost of launching new products.

Avoiding the need to pioneer uncertain markets

New markets represent the best illustration of uncertainty of future events. In the case of the unsolved uncertainty indicated above, it will be much less risky for an established company to wait until the dominant design has been established and accepted by the market, letting innovative entrepreneurs to absorb this risk. In fact, Real Options Theory suggests that having an option to wait is extremely valuable under uncertain conditions (Dixit and Pyndick 1994). However, the associated opportunity cost may be the first-mover advantage. Robinson and Min (2002) have confirmed this idea concluding that some delay appears to help the early follower resolve market and technological uncertainty, but an additional delay hurts early follower's survival rate. Despite the relevance of this conclusion, they do not specify the mechanisms that permit the firm to afford this delay. I hypothesize that companies with strong market-based assets can avoid the uncertainty involved in pioneering and still have a prominent position in the market because assets such as brands and channel relationships can be leveraged to compensate for later market entry. Soft drinks industry provide a clear example since neither of the two companies with high brand and channel equity (Coca Cola and Pepsi) was the first to introduce radically new products, such as bottled water and high-energy drinks. Both leaders waited until it was clear that these new markets had sufficient potential and then leveraged their assets enabling them to become market leaders in the new markets. Another example in the software industry is Microsoft which follows a similar strategy. The strong and multiple bonds that Microsoft has with its customers (due to cross-sell of products)

create high switching costs for these clients, so they have a strong incentive to wait until Microsoft offers one of its products in a new market.

Facilitating consumer adoption of new products

New products represent a risk for customers and retailers, so a firm will be able to convince them to adopt even a radical innovation if its current products are already a success (Chandy and Tellis, 2000) or at least the potential users are familiar with the brand.

Extensive work on brand extensions documents that consumers' higher-quality perceptions towards the original brand are associated with more favorable attitudes toward the extension, provided there is some fit between them (Park and Srinivasan, 1994). Recent research has shown that consumers are loyal to a multi-product firm even when its does not offer a product that matches their preferences better than a product of competing firms (Anand and Shachar, 2004).

A company with strong market-based assets can have a scheduled migration of customers to other products in the firm's portfolio or can cross-sell other products (it can be done in a sequential fashion, so these companies can learn from the market responses). Indeed, prior research has concluded that a satisfied customer base will translate in a profitable growth rate because satisfaction has been linked to repurchase intentions and retention rate both at the individual (Anderson and Sullivan, 1993) and accumulated or firm level (Johnson et al, 1995).

Reducing the cost of launching new products.

This argument is very similar to the reduction in costs described above. Slotting allowances are related to the retailer's effort required to push the product and it has been shown that these expenditures are lower for highly-advertised brands

(Lariviere and Padmanabhan, 1997). Investments in advertising for a flagship brand generate positive spill-over effects, resulting in less advertising expenditure for extensions (Smith and Park, 1992).

These mechanisms are consistent with the conceptualization of options proposed by Bowman and Hurry (1993) as preferential access to future opportunities arising from the "interplay of the organization's existing investments, its knowledge and capacities and its environmental opportunities".

H4: Firm's advertising will interact with the level of industry unpredictability, to positively affect its market-to-book ratio.

H5: Firm's advertising is negatively related to the volatility of its market-to-book ratio.

SUMMARY

This chapter developed the theoretical arguments explaining the effect of market-based assets on risk reduction and the defense of high market-to-book ratios even under uncertain market environments. The next chapter describes in detail the methodology used in this research. {These (and other) wording suggestions change the tone from 1st person ("I") to more standard descriptions of what the text says (not what "I say").)

CHAPTER 4: RESEARCH METHODOLOGY

This chapter examines the sources of data used in this research. Next, dependent, independent and control variables included in the models are described. Finally, statistical techniques used to test the hypotheses are discussed.

DATA SOURCES

Data used for this research includes 576 large publicly listed firms that were part of the Fortune Reputation Index and/or the American Satisfaction Index between 1994 and 2000. The Fortune reputation index is published annually by Fortune magazine and is based on a survey conducted from 8,000 industry experts. The reputation index includes information on eight qualitative attributes: quality of management, quality of products or services, value as a long-term investment, innovativeness, soundness of financial position, ability to attract, develop, and keep talented people, responsibility to the community and environment, and wise use of corporate assets.

In the American Customer Satisfaction Index (ACSI) database, customer's evaluations of product or service quality are based on actual experiences with the goods and services being measured. This indicator is produced through a partnership of the University of Michigan Business School, the American Society for Quality (ASQ), and the international consulting firm, CFI Group.

Despite the time frame studied is 1994-2000, some advertising and financial figures were computed back to 1990 for the purposes of calculation of some variables such as advertising capital (discussed below), which were based on values

accumulated from earlier periods. The final data set is an unbalanced panel with 576 firms with 3081 complete firm-year observations. Firms included in the dataset cover a wide range of industries Table 3). This cross-industry sample enhances generalizability of the findings across different markets. On average there were 5.35 observations for each firm. Table 4 provides descriptive statistics of the firms included in the sample.

The basic marketing information included in the database is focused on advertising provided by *Leading National Advertisers' Multi-media Service*, published quarterly by CMR, a subsidiary of Taylor Nelson. This service reports advertising expenditures in ten major media: Consumer Magazines, Sunday Magazines, Newspapers, Outdoor, Network Television, Spot Television, Syndicated Television, Cable Television, Network Radio and National Spot Radio. The "Ad$ Summary" lists brands alphabetically and shows total 10-media expenditures, media used and parent company for each brand.

Data on Advertising was available on printed version, so it was necessary to scan all the information, convert it to Excel and then painstakingly aggregate advertising expenditures related to brands owned by companies included in the sample. Data has also been checked for consistency by triangulating multiple sources, such as:

1. *The Advertising Red Books,* owned by Lexis/Nexis Group. I used information from the Advertiser Database containing data on over 15,500 U.S. and international advertisers who each spend more than $200,000 annually on advertising. Each listing includes advertising expenditures by media, current agency and brand name information. This database allowed

me to check for each firm's brand portfolio and I updated the information for each year.

2. *Business and Company Resource Center*, owned by Thompson Gale. This database provided useful information on corporate chronologies and company histories that allow me to check changes in corporate names and mergers and acquisitions.
3. *Compustat* annual company and industry segment files provided financial data.

Data was merged in a single database using SAS software.

To my knowledge, this is the first study using information on advertising generated by external sources. Previous studies have used advertising data provided by COMPUSTAT. There are several problems associated with this practice. First, there is not a standard definition of the specific expenditures included in the Advertising category, so the definition is at every firm's discretion. Second, firms are not required to report advertising expenditures, and in fact many do not report this information systematically. This creates a serious problem of sample selection bias because there may be a reason explaining when a firm decides to report advertising data (for instance, they may report this item only when advertising expenditures were above the industry mean, or to send a signal to financial markets). Also, because data is not missing at random, this creates serious statistical problems. The dataset used in this dissertation does not have any of these biases.

DEFINITION OF KEY VARIABLES

This research intends to empirically show that advertising assets have a positive impact on business performance and a negative impact on the volatility and

vulnerability of these performance measures. Detailed definitions of the variables, their corresponding COMPUSTAT data items, and references to literature sources justifying their construction are provided in Table 2. For example, "Financial Leverage" is described as Book Debt divided by Total Assets as used by Baker and Wurgler (2002). All the variables were computed at the corporate, not the product or brand, level.

Dependent Variables

Cash-Flow over Assets.

Recent literature in finance stresses the importance of focusing on cash flow rather than earnings as the latter can be manipulated by evoking different accounting standards. As a consequence, cash flow has emerged as one of the most relevant business performance measures and volatility in cash flows is critical from both practitioner and theoretical perspectives. "As risk managers, we spend much of our time examining the factors that cause cash flows to fluctuate. This is important work, since low cash flows may throw budgets into disarray, distract managers from productive work, defer capital expenditure or delay debt repayments. By avoiding these deadweight losses, risk managers can claim they add to shareholder value" (Shimko, 1997). Empirical evidence shows that firms with higher cash flows volatility will have higher equity capital costs (Froot et al, 1993; Myers, 1977). Moreover, it has been shown that firms react to cash flow variability not only by delaying necessary investments but also forgoing them permanently (Minton and Schrand, 1999). Additionally, some managers tend to keep high levels of cash reserves (i.e., focus on liquidity) as a strategy to manage risk in uncertain markets.

This is, of course, not the best use of financial resources. Hence, cash flow variability is a critical dependent variable in this study.

Following Brush et al (2000), cash flow is defined as the lagged operating Income before depreciation minus total income taxes, minus change in deferred taxes from the previous year to the current year minus gross interest expense minus preferred dividend requirement on cumulative preferred stock and dividends paid on non-cumulative preferred stock minus total dollar amount of dividends declared on common stock. In order to enable comparability across companies we focus on cash flow is divided by assets as the appropriate metrics, following Brush et al (2000) and Lehn and Poulsen (1989).

Market to Book Ratio

One of the main criticisms of accounting measures of performance is their treatment of advertising and R&D expenditures as expenses instead of investments with future payoffs (Carlton and Perloff, 1990). Because advertising can have long-term multi-period benefits, the implications are the overstatement of current expenses but also the understatement of the firm assets by as accounting rules ignore most of intangible market-based assets such as brands and customer relationships that are an outcome of advertising and other marketing investments. When financial markets are efficient, capital market securities prices provide the best estimates of the value of a firm's resources. This value corresponds to the present discounted value of the future stream of cash flows generated by those resources (Fama, 1970). If markets are assumed to be efficient in the aggregate, there is no reason to expect any systematic bias from this calculation in large cross-sectional samples. Hence, Lindeberg and Ross (1981) found that Tobin's Q of firms in R&D or advertising-intensive industries

are abnormally high. One of the measures that better reflects the future impact of intangible assets is the Market-to-Book ratio. In fact, it has been shown that firms with higher market-to-book ratios also have higher growth opportunities (Hovakimi, Opler and Titman, 2001) and can be expected to have lower risk (Srivastava *et al* 1997).

We calculate the market-to-book ratio by dividing market value of Equity by the book value of the firm. Following Baker and Wurgler (2002), the Market Value is calculated as the year-end values of the firm's common stock. Book Value equals to Total Assets minus Total Liabilities and Preferred Stock, plus Deferred Taxes and Convertible Debt.

Independent Variables

Advertising Capital

Studies in Marketing normally analyze advertising effectiveness, using a flow measure, such as advertising intensity (advertising/sales). However, a stock measure was used because it is consistent with the construct of market-based assets. Additionally, previous studies analyzing the effect of R&D on market value have used the stock measure. Therefore, advertising is represented by a stock measures (which include current period expenditures) and is constructed using the following recursion:

$$K_t = (1 - \delta) K_{t-1} + I_t \quad ,$$

where K_t is the accumulated stock of advertising and I_t is the current period investment. Annual depreciation rate δ is assumed to be 45 % for advertising (following approximately Hirschey and Weygandt, 1985). These authors estimated economic depreciation rates in the 10-20% range for nondurables and 30-60% in the

durables sector. Based on the fact that estimates of the average duration of the advertising effects on market value between one and five years (Broadbent, 1993; Graham and Frankerberger (2000), Hirschey and Weygandt, (1985), Klock and Megna, (2000). I have a conservative position since I will estimate the initial stock for each firm by starting the recursions in 1992 (the sample starts in 1994).

Due to its high skewness, I use the log transformation of advertising capital and compute log (advertising capital). Skewness improved from 8.2 to 0.75 whereas Kurtosis decreased from 95.9 to 2.4. Therefore, even though there is a high variation of advertising expenditures between individual firms, the log transformation helps to ensure that the estimated regression coefficients are not unduly influenced by extreme values on advertising and other covariates with large dispersions, such as market capitalization.

Industry classification

I followed Fama and French's forty eight industry classification (Fama and French, 1997) because recent research in Finance has increasingly used this industry grouping due to the drawbacks of SIC Classification. In particular, Kahle and Walking (1996) question the consistency of the SIC codes. SICs codes were taken from COMPUSTAT and converted to Fama and French's classification using a DO file in STATA.

Environmental Unpredictability

Based on this industry classification, I computed the following unpredictability measures, using the whole COMPUSTAT Industrial database to calculate them rather than only those companies included in the main sample.

1) Industry average of the Coefficient of Variation of the times series of firm's sales.

For each year and firm, I calculated the Coefficient of variation as the time-series standard deviation of the previous twelve quarterly sales and divided it by the time-series mean. I then averaged those coefficients within each industry. Quarterly Sales corresponds to Data 2 in COMPUSTAT.

2) Industry average of the Coefficient of Variation of the times series of firm's income.

For each year and industry, I calculated the Coefficient of variation as the time-series standard deviation of the previous twelve quarterly Income divide it by the time-series mean. I then average those coefficients within each industry. Quarterly Income corresponds to Data 21 in COMPUSTAT.

In order to check the validity of these unpredictability measures, I computed other unpredictability proxies used in previous research. Specifically, I computed:

3) Volatility in income growth rate.

For each year and industry, it is the moving standard deviation of income growth rate in the previous three years.

4) Industry Income dynamism.

Unpredictability was calculated with regression analysis in which a variable for year was regressed on a variable for the industries' income (Dess and Beard, 1984; Keats & Hill, 1988). Five years' data were used for each year's regression (i.e. industry income values from 1989 to 1993 were used to predict volatility in 1994). The basic equation was:

$$y_t = b_o + b_1 t + e_t$$

where y_t = industry income, t = year and e = residual

Dynamism is the standard error of the regression slope coefficient divided by the mean of income. Larger values indicate greater product-market uncertainty.

5) Sales Unpredictability.

I used R^2 for sales regressed on sales lagged one year. A high R^2 indicates that a prior year's sales figure accurately predicts current year's sales.

The correlations among these environmental unpredictability measures are significant and positive, suggesting convergent validity among these measures. For the statistical analysis I included Industry average of the Coefficient of Variation of the times series of firm's sales as the indicator of Environmental Unpredictability.

Control Variables

Operating Leverage

Research has shown that operating leverage is positively related to the total, systematic and unsystematic risk of its equity (Lord, 1996) and it is considered as a standard risk proxy (Rosett, 2001). From a practitioner's point of view, increased operating leverage registered in the last decade has negatively affected earnings by more than in past slowdowns (Berner, 2002). Operating Leverage is operationalized as the ratio of fixed assets to total assets for each year, following Sorensen (2002).

Financial Leverage

Financial leverage has been theoretically and empirically linked to earnings volatility (Baver et al, 1970: White et al, 1994). Financial Leverage is operationalized as Book Debt/Total Assets.

Firm Size

There are several reasons to include firm size as a control variable. Following the lead of portfolio theory, small firms are more risky because they are likely to be less diversified. To the extent that operating earnings from different segments are less than perfectly correlated, diversification leads to a less volatile cash flow stream from the large firma than small firms. However, empirical evidence has found contradicting results. Finally, there is evidence suggesting that firm size is at least as good as an historical estimate of beta as a measure of equity risk (Fama and French, 1992; Kothari et al, 1995).

This research includes two operationalizations of firm size in order to avoid simultaneity problems. When the dependent variable is Cash Flow over Assets, the logarithm of Market Capitalization is the indicator for firm size. Alternatively, when the dependent variable is the logarithm of market to book ratio, the logarithm of Total Assets is the measure of firm size.

MODEL SPECIFICATION

In this study we use pooled time series analysis to test the hypotheses. This means combining typical time series or regular observations on a unit of analysis with cross-sections or observations on a unit of analysis at single time points. The main advantage to combining cross-sections and time series is to capture variations across different units in space (in this case firms) and variations that emerge over time. Pooling is particularly useful when the length of the time series is abbreviated and the sample of cross sections is modest (Sayrs, 1989).

However, analyzing data on the same firms over time represents a violation of the general assumption of independence of observations. In fact, it is important to

highlight the different sources of heterogeneity in firm performance. First, there are unobserved factors which vary from one firm to another or within-firm effect. A second source of heterogeneity refers to influence of other firms operating in the same industry, which is very likely to occur when valuating market-to-book ratio. Finally, there are over-time influences on firm performance due to persistent effect or previous investments in marketing. This research uses different methods to respond to all these sources on heterogeneity.

Hypotheses related to volatility of cash flows

For the first set of hypothesis related to cash flow volatility, most research has used the variance about the sample mean. However, this approach is not appropriate because firms that have enhanced their performance over time will be categorized as riskier as firms that have experience worse financial performance. This is because the mean is a poor estimate of the time trend in performance (Oviatt and Bauerschmidt, 1991; Ruefli et al, 1999).

Therefore, I use multiplicative heteroskedasticity or variance function models (Davidian and Carroll, 1987, Sorenson and Sorensen, 2001) to estimate the effects of advertising assets on performance volatility. These models imply extending the standard regression approach of the expected value of the dependent variable to include a model of the variance of the residual (or equivalently the dependent variable) (Sorensen, 2002).

$$Y_i = \mu_i + \sigma_i \varepsilon_i$$

$$\mu_i = E(Y_i) = \beta' X_i$$

$$\sigma_i = Var(Y_{i)} = \exp(\gamma' Z_i)$$

where Y_i is the dependent variable with mean μ_i and variance σ_i. This methodology produces a linear model for the mean of the dependent variable and a log-linear model for the variance of the dependent variable, conditional on a set of covariates predicting the mean and the variance (these covariates may or may not be different). The γ parameters reflect the effect of covariates on the variance in the dependent variable. Therefore, covariates that reduce the volatility in performance should have $\gamma < 0$. This model is estimated using maximum likelihood methods (Greene, 2003; Weesie, 1998).

Based on the first set of hypothesis, the model estimated is as follows:

$$\text{Cash Flow over Assets} = \alpha_j + \beta_{1j} \log \text{advertising capital} + \beta_{4j} \text{Financial leverage} + \beta_{5j} \text{Firm Size} + \beta_{6j} \text{Operating leverage} + \varepsilon_{it} \quad \text{(Eq. 1)}$$

Despite the innovativeness of this approach, there is a critical drawback: this method does not account for possible autocorrelation within firms, as mentioned above. The adjustment for autocorrelation in the context of variance function models did not seem feasible. An alternative approach to study the determinants of volatility of business outcomes is to operationalize volatility as the degree of variation about a predicted mean performance level, following Sorensen (2002). For each firm, I estimate a separate regression of cash flow over assets on the firm's size, operating and financial leverages, because they are the major determinants of volatility, as discussed above. Then, I compute the mean squared error from each firm's regression equation and this measure represents the portion of performance that remain unpredicted or volatile. This is because if a firm registers periods of high and low

performance, it will be more difficult to predict its future financial performance, so the residuals about its regression line will be greater than if the firms performs consistently. Finally, I regress these residuals squared on the advertising asset and a control for industry.

Hypotheses related to the impact of advertising asset on Market-to-Book ratio

The model is specified as:

$$\text{Logmtb} = \alpha_j + \beta_{1j} \log \text{advertising capital} + \beta_{2j} \text{uncertainty} + \\ + \beta_{3j} \log \text{advertising capital} * \text{uncertainty} + \beta_{4j} \text{Financial leverage} + \beta_{5j} \text{Firm Size} + \beta_{6j} \text{Operating leverage} + \varepsilon_{it} \quad \text{(Eq. 2)}$$

Following Hall (1993), the model includes the natural logarithm of market to book ratio because a linear formulation would imply unlimited constant returns to scale in intangible investments, which is unlikely to be the case.

To control for unobserved differences between firms, including issues of autocorrelation, I estimated a fixed-effects model using STATA statistical software. Estimating a fixed-effects model in STATA is equivalent to adding a dummy variable for each firm (Greene, 2002). This is a very conservative approach and fully captures the variation within firms.

There are new statistical approaches aimed at providing a unified approach to address the sources of heterogeneity mentioned above. In particular, the method of generalized estimating equations is a population-average approach to estimation, introduced by Liang and Zeger (1986) in Biometrics. Population-averaged models differ from the more common cluster-specific approached as fixed and random-effects (Neuhaus et al, 1991). Cluster–specific approaches model the probability

distribution of the dependent variable as a function of the covariates and a cluster-specific parameter. This latter term may be either estimated concurrently with the model (as in the fixed-effects approach) or be assumed to follow some stochastic distribution (as in the random-effects specification). In contrast, population-average approaches model the marginal (or population-average) expectation of the dependent variable as a function of the covariates. Therefore, these models allow for explicit incorporation and modeling of interdependencies across firms and years through the specification of the working correlation matrix. Also, the parameter estimates obtained through application of these models are robust to misspecification of those interdependencies. In particular, the GEE approach is population-averaged panel-data model that allows the user to account for intra-subject correlations, often treated as nuisance parameters, among repeated measurements on the same subject. Different subjects can have different numbers of repeated measurements. The correlations are specified in the form of a working correlation matrix, which can have a variety of possible structures. The method estimates model parameters by iteratively solving a system of equations based on quasi-likelihood distributional assumptions.

Despite the capabilities described above, GEE handles only one level of clustering and it also relies on the independence across subjects to estimate consistently the variance of regression coefficients (even when the assumed correlation matrix is incorrect). In this study we have a cross-industry sample, so failing to understand the characteristics of the industry in which a particular firm competes can have dramatic consequences in evaluating the impact of adverting on market-to-book ratio. Brush et al (1999) highlighted the necessity of understanding the effect of industry characteristics on the relative influence of industry and

corporation on firm performance. Rice and Jones (1997) stressed that when unobservable community (industry) effects are correlated with individual level regressors, it is not possible to include community level variables in the model. They propose the use of hierarchical lineal modeling. Following this reasoning, I adopt an approach based on mixed models, using PROC MIXED in SAS software to fully discern the impact of advertising on market-to-book ratio.

Mixed Effects regression models estimate change for each subject across time Therefore, they estimate subject-specific regression coefficients (not average change in a population). They take into account the dependency of observations by assuming a covariance structure that is determined by the best combination of variability. The need for covariance parameters arises because firms are grouped in clusters (industries in our case) and data from a common industry are correlated. In our analysis, we use Restricted Maximum Likelihood (REML) estimation of the covariances. The REML estimation of the covariances were used, in turn, to obtain the Generalized Least Squares (GLS) estimates of the regression coefficients and their standard errors.

In conclusion, this research takes into account different sources of dependence among observations by using several statistical approaches.

CHAPTER 5: RESULTS

This chapter first examines the impact of advertising capital (market-based assets) on firm performance and its volatility. Both variance function models and panel-data analysis are used to answer this question. We then examine the relationship between advertising capital on the value of firms under uncertain market conditions.

DESCRIPTIVE STATISTICS

The distribution of sampled firms by industry is described in Table 3 (this table refers to between distribution). Service Industries have a strong presence in the sample, because the five industries with highest frequency are services (the top five represents 35.5% of the sample). Table 4 summarizes the descriptive statistics for all the main variables included in the empirical analysis and Table 5 reports more detailed information on the standard deviation. For the variable Advertising Capital, the overall variability of every observation from their mean calculated over 3081 observations of 576 firms can be decomposed into: (1) between group variability calculated over 576 and (2) within-group calculated for all 3081 firm-years of data. The T-bar value indicates that, on average firms had 5.35 observations (years of data). "Advertising capital within" varied between -3.47 and 6.78, referring to deviations from each firm's average advertising capital.

Table 6 reports the correlation table for the main variables included in the model. Most of the correlations are significant and in the expected direction, but none of them is sufficiently high as to raise multicollinearity concerns.

THE RELATIONSHIP BETWEEN MARKET-BASED ASSETS AND REDUCTION IN VOLATILITY

Table 7 reports estimates from the multiplicative heteroskedasticity model of firm performance. Hypothesis 1 and 2 argue that Advertising capital has a positive effect on corporate performance (indicated in Table 7 by ROA and Cash Flow/Assets (CFOA)), whereas its impact on the variance of corporate performance can be expected to be negative. In fact, one of the key issues in the model is whether the performance benefits of advertising assets remain positive once differences in variance have been modeled. This is the case for Cash Flow Over Assets (CFOA). Advertising Capital has a significant and positive effect on the mean CFOA, even when controlling for firm size. The effect of advertising capital on the variance of both ROA and CFOA is negative, as expected. The magnitude of this effect is important because increasing the advertising capital by one standard deviation leads to a 22% reduction in the variance of CFOA following the expression (exp((x+sd)*beta)-exp(beta*mean))/(exp(beta*mean)).

Despite its innovative approach, this modeling approach has a relevant methodological drawback. Because this research uses pooled time series data, it is not possible to assume independence within firms, due to unobserved time-invariant characteristics of the firm (Greene, 2003). For example, the managers of one firm may be consistently more risk averse than other managers and as a result, the firm may have consistently low variation in their financial inflows.

Adjusting for lack of independence within firms in the context of variance function models did not seem straightforward. Hence, we consider the most widely used techniques to accommodate unobservable effects. First, the unobservable effects can be included in the error term. The variance-covariance matrix of the resulting

non-spherical errors must be transformed to obtain consistent estimates of the standard errors. In this case, the "random effects" estimator is appropriate (Hsiao, 1989). However, a problem arises with the random effect estimator if the unobservable effects, which have been included in the error term, are correlated with some of the regressors. Following the previous example, managers' risk aversion may cause them to reduce financial leverage and thus reduce the level and variability of cash flows. This simultaneity makes the random effects estimator inconsistent. Alternatively, a dummy variable can be included for each firm. This estimation approach, known as "fixed effects", yields consistent estimates, regardless of correlation between firm-specific error components and the regressors. However, it is less efficient than the random effects estimator. This inefficiency is because the fixed-effects model estimator requires a separate parameter to be estimated for each firm in the sample in place of the single variance estimate that is required for the random effects estimator.

To examine the question of whether or not the firm effects are uncorrelated with the regressors, we use the Hausman specification test. The test rejects exogeneity in the random effects model. As a result, fixed effects estimates are preferable.

Table 8 presents the results of the fixed effects model with CFOA as the dependent variable. The results indicate that a positive change in advertising capital has a positive change in the mean of Cash Flow/Assets, while controlling for the effects of firm size and financial and operating leverage. These findings confirm the conclusions derived from the variance function model for CFOA in column 2 of Table 7.

However, autocorrelation can be a problem if there is a missing variable or underspecified model. This research proposes a simple model added to the fact that firm performance depends on many factors that are difficult to capture in a statistical model. Therefore, an additional analysis was conducted to check the robustness of the results. Generalized estimating equations (GEE) is an analytic tool that accounts for correlation of responses within subject for response variables and is flexible enough for use in analyzing response variables that are not normally distributed (Liang and Zeger, 1986) (Zeger et al, 1988).

One of the key issues in using GEE models is the selection of the correlation structure of responses within firms. In this case the autoregressive structure was chosen because measures are taken through time on the same firm and observations taken more closely in time are more highly correlated. Additionally, the robust standard errors option provided in STATA 8 was chosen while estimating parameters. The idea is to make a temporary or working assumption as to the correlation structure in order to form the estimates but to properly adjust those estimates for the correlation in the data. It is feasible to do that because the generalized equations approach, which goes hand in hand with estimation with robust standard errors will best work with relatively fewer time points and relatively more subjects, which is exactly our case. Results using GEE (for mean effects) are reported in Table 9, confirming a positive impact of advertising on Cash Flow/Assets.

These results from the GEE Model (Table 9) are similar to those derived from the Mixed Model (Table 10) that takes into account the interdependence of firms operating in the same industry. Hence, additional analyses have confirmed the robustness of the variance function's finings regarding the effect on the mean of cash

flow over Assets. Table 11 provides a comparison of the advertising capital's regression coefficients produced by the different approaches. They are consistent in assigning the advertising capital a positive and significant effect on cash flow over assets.

To confirm the results regarding the variance of cash flow over assets, I conducted the following analysis. For each firm, I estimate a separate regression of cash flow over assets on the firm's size, operating and financial leverages. Then, I compute the mean squared error from each firm's regression equation and this measure represents the portion of performance that remains unpredicted or volatile. This is because if a firm registers periods of high and low performance, it will be more difficult to predict its future financial performance, so the residuals about its regression line will be greater than if the firms performs consistently. Finally, I regress these residuals squared on the advertising capital and a control for industry. Results show that advertising capital reduces the magnitude of the residuals ($b = -.00056268$ $p < 0.006$). Therefore, advertising capital can effectively reduce the unpredictability of a firm's future financial performance.

THE RELATION BETWEEN MARKET-BASED ASSETS AND MARKET VALUE UNDER UNCERTAIN CONDITIONS

Hypothesis 3 predicts a positive impact of Advertising on the expected future value of the firm. Before running the panel data models, I analyzed several regression diagnostics. In particular, I inspected the augmented component-plus-residual plot showing that the cross-medians do not show some curved pattern. In fact, the component-plus-residual medians closely follow the regression model, so nonlinearities are not evident.

As expected, Table 12 shows that the impact of advertising capital on market-to-book ratio is positive, indicating that increases in advertising are likely to enhance the value financial markets assign to the firm. Because we have a log-log model, the effect of a 1% increase in advertising capital will represent 0.0137% increase in Market-to-book ratio. It is important to highlight that in fixed-effect models, the variation in the dependent and independent variables arises not from differences between firms (cross-sectional differences that are likely to be very high in this sample of firms) but from changes in the independent and dependent variables over time within each firm. Therefore the results are based in a very conservative analysis.

Hypothesis 4 contends that a firm's advertising will interact with the level of environmental unpredictability to positively affect its future value. The interaction term was introduced after mean-centering the variables. Also, to ensure complete model specification, the model includes all main effects of explanatory variables used to construct the interaction terms. Table 12 shows the interaction term having a positive effect on market-to-book ratio, suggesting that as environmental unpredictability increases, the positive impact of advertising on market-to-book ratio is reinforced. Thus H4 was supported. Generalized Estimation Equations estimation provides conclusions in agreement with the Fixed-Effects Model, as shown in Table 13.

Because it is necessary to control for the hierarchical structure of the dataset (firms nested within industries), Table 14 provides the mixed-models estimation, showing results consistent with the Fixed Effects Model (Table 12). Table 16 provides a comparison of the impact of advertising capital on market-to-book ratio

using different estimation procedures. The results, just as in the case of the impact of advertising capital on CFOA (Table 11), are convergent.

Hypothesis 5 proposed a negative impact of advertising investments on the variance of Log(market-to-book ratio), sharing the same rationale with cash-flow over assets. Contrary to expectations, the variance function analysis depicted in Table 15 showed a positive and significant impact on Log(market-to-book ratio). Additional analysis confirmed these results. For each firm, I estimate a separate regression of logarithm of market to book ratio on the firm's size, operating and financial leverages. Then, I compute the mean squared error from each firm's regression equation and this measure represents the portion of performance that remains unpredicted or volatile. Then, I regress these residuals squared on the advertising capital and a control for industry.

Results show that advertising capital increases the magnitude of the residuals ($b = .02138$ $p < 0.001$). Therefore, advertising positively influences the variance of market-to-book ratio). Thus while advertising capital was expected to reduce the volatility of market-to-book ratios and therefore the volatility in market value of firms, it actually increases volatility. A possible explanation is that those firms that have been investing significant amounts in advertising are more visible to the investment community. Investors can therefore be expected to pay more attention to both good and bad news on securities for firms that advertise more—leading to higher volatility in market value (i.e., market-to-book ratios).

SENSITIVITY ANALYSIS

Using log (Advertising) as an alternative measure of Advertising and running all the models provided similar results.

SUMMARY OF KEY RESULTS

Results from the empirical analysis strongly support most of the hypotheses. Results were robust among several methodologies. Advertising capital positively influences the mean of both cash flow over assets and Log (market-to-book ratio). For the latter, this positive effect is even stronger when firms face uncertain environments. Also, results show that the advertising asset reduces cash flow volatility. However, the effect on market-to-book variance is positive, contrary to our expectations. These results represent a confirmation for the role of market-based assets (particularly advertising) as effective shields, protecting the firm and making its outcomes less volatile and vulnerable even under uncertain environments.

CHAPTER 6: CONCLUSIONS AND FUTURE RESEARCH

This research started by highlighting several deficiencies in the measurement of marketing performance. In particular, current marketing metrics do not fully capture the contribution of marketing investments to financial performance, and especially, risk and value of companies. These deficiencies in marketing metrics' are partially due to their almost exclusive focus on short-term revenue and market share, providing a myopic strategic insight of the firm's future opportunities. Therefore, this research began noting the relevance of risk as an important performance dimension. After reviewing the literature I could not come to a definitive conclusion on the determinants of risk that managers can effectively control. By proposing a conceptual framework and empirically linking marketing investments and risk reduction, this research attempts to fill the aforementioned gap in the literature. Specifically, this research provides an examination of the impact that market-based assets have on reducing risk and managing uncertainty.

Marketing investments (in this research limited to cumulative advertising stock or capital) create intangible assets based on enduring relationships with key stakeholders (relational assets) and the ability to identify future growth opportunities (intellectual assets). The conceptual framework argues that the impact of these assets on risk reduction is twofold:

1. Brands generate enhanced customer loyalty that results in secure future earnings streams (this corresponds to risk's volatility dimension).
2. Brands can effectively create a shield, allowing their firms to protect themselves when facing uncertain conditions, such as competitive moves

or the creation of new markets (responding to risk's vulnerability dimension).

I tested these ideas in the context of a cross-industry sample of U.S. large companies. The findings of this research provide a strong support for the proposed link between marketing assets (specifically those created by advertising investments) and the reduction of corporate risk. Consistent with the idea that marketing-related assets can generate more stable income, I found that cash-flows are less volatile when investments in advertising are increased. Empirical results confirm the positive relationships between advertising investments and firm's market-to-book ratio, suggesting that financial markets associate brand-building activities with enhanced growth opportunities. Moreover, this impact is even stronger when the firm is operating in highly unpredictable environments. These findings suggest that firms with strong brand assets are better prepared to outperform their competitors when market conditions are uncertain. Hence, investments in marketing can enable their firms to be less vulnerable to external conditions.

CONTRIBUTIONS TO RESEARCH

This dissertation provides empirical evidence of the asset-like nature of marketing investments due to their ability to generate stable earnings that are resilient to environmental uncertainties. This study responds to Lev and Sougiannis's (1999) call for examination of the performance implications of various assets emphasizing the relevance of marketing-related competencies. Additionally, the market-based assets framework (Srivastava et al, 1998, 1999, 2001) represents a path-breaking conceptual contribution to the field of marketing strategy. However, this is one of the

earlier studies that empirically tested some of the propositions derived from the market-based assets model.

This study has made a small start in examining the impact of marketing investments on financial performance, risk and value of companies. The marketing investment that is examined in this study is limited to advertising stock or capital. This obviously limits the scope of the study. However, advertising effects (or lack thereof!) on sales and profitability have been the topic of much discussion and therefore the focus of this study on advertising's impact on financial performance is timely. Moreover, this research emphasizes the relevance of risk as strategic metric by relating its impact on other widely known performance measures such as shareholder value. This perspective (i.e., the impact of advertising on risk and, subsequently, on company value) has largely been overlooked. Overlooking the implications of certain marketing activities may lead to disastrous consequences in the firm's long-term performance.

This study also introduces the impact on uncertainty as a meaningful moderator in the linkage between marketing activities and performance. Along these lines, this research responds to the call for more inquires on the dynamic perspective of marketing strategy (Dickson et al, 2000).

From a methodological point of view, this study undertook several steps to ensure the validity of results and substantive contributions. First, it is based on longitudinal analysis, allowing examining the impact of changes of advertising on risk over time. I undertook a careful revision of the statistical assumptions underlying the data and used several methods to assure robustness of the results. The fact that multiple methods converge to the same results lends some credence to the robustness

of findings. Second, this research introduces several innovative statistical approaches to marketing. Because the main interest was on the variance of performance measures, we conducted our analysis using multiplicative heteroskedasticity models that provide a unique insight of the factors influencing the mean and variance of the dependent variable. Other methods such as Generalized Estimating Equations and Hierarchical Linear Modeling allowed us to take into consideration and mitigate weaknesses associated with the potential non-independence of observations in panel data analyses from several perspectives.

The major findings of this study add a "major boost in the arm" for advertising. Key findings related to the proposed hypotheses include:

1. H1. Advertising capital (stock) has a positive impact on financial performance (as reflected in the cash flow to asset ratio).
2. H2. Advertising investments reduce the volatility of company profits and cash flow.
3. H3. Advertising investments boost market valuation (as reflected in the market-to-book ratio).
4. H4. Advertising investments are even more important enhancing company value in dynamic and turbulent market environments.
5. H5. Interestingly, contrary the expectations, the study find that advertising capital did not reduce the volatility of company value. It increased it. This suggests that companies that are highly visible due larger investments in advertising fall under greater investor scrutiny. While success is rewarded failure is equally likely to be punished.

Finally, the data set used in this study is unique in that it integrates information from different sources – LNA for advertising, COMPUSTAT for financial performance, risk and valuation, Fortune for reputation and ACSI for customer satisfaction. While this study has focused on primarily advertising and firm performance, one can broaden the scope in the future to include customer satisfaction and reputation. Data were carefully screened and validated through triangulation of several directories. The key information on Advertising was generated from sources external to the advertisers, warranting uniform and objective criteria. Additionally, the sources consulted for dependent variables were different from the sources providing information on advertising, ruling out potential response biases.

CONTRIBUTIONS TO PRACTICE

This research shows that risk is a relevant metric that need to be considered by top managers when assigning their strategic priorities and assessing the contribution of marketing areas. It also advises managers that marketing can create intangibles assets enhancing corporate performance but these assets need to be fed by continuous investments. Additionally, this dissertation provides evidence that investments in marketing can effectively reduce risk and protect the company under unpredictable environments.

LIMITATIONS

There are several limitations derived from the sample selected for the empirical analysis. First, the sample focuses on large companies. It is not possible to extend these results to smaller companies with less resources and visibility in financial markets. Additionally, results show cross-industry average effects are significant but results may be weaker (e.g., in business-to-business markets) or

stronger (e.g., in packaged goods) in specific industries. These differences need to be examined. Finally, the models are empirically tested based on only six years of data. Additionally, the study does not include other intangibles such as reputation or R&D and more interestingly, their joint effect on corporate performance. Finally, the variance function model does not account for panel structure data. Even though this study conducted several analyses to show robustness of the results, it is necessary to revise the statistical properties of the model and introduce the refinements required by the dependency of observations.

FUTURE RESEARCH

This study focuses on advertising investments and their impact on corporate performance and risk. However, this is an incomplete approach, because it is necessary to include other marketing investments (e.g., sales force expenses, promotions designed to induce trial and growth in customer base) and market-based assets (e.g, channels, brands and customer bases) and analyze their interactions on influencing risk. In fact, we collected data on scores registered at the corporate level in the American Customer Satisfaction Index and Fortune's corporate reputations. Table 17 shows the correlation matrix of these other measures of market-based assets and their relationship with some volatility measures. Do note that while this study focuses on advertising capital and not brands per se, advertising has a strong positive relationship with both customer satisfaction and corporate brand equity (as reflected in the Fortune reputation index) (see Table 17). Also, indirect effects of advertising (e.g., via reputation or customer satisfaction) should be examined.

As a follow-up to this dissertation, we intend to study industry specific effects through hierarchical linear models to understand industry dynamics and discern the particular roles that market-based assets play in each industry. This study is focused on few risk measures but understanding the domain and interdependencies of several other measures will shed some light on understanding risk as a construct. Also, the use of alternative risk measures, such as dispersion in analysts forecasts will allow us to enhance our understanding of how analysts and financial markets value marketing investments.

The analysis of factors influencing the impact of marketing activities on risk needs to be addressed. Aspects such as degree of persistence of advertising effects remain unexplored. Finally, this study is based on two major dimensions of risk, namely volatility and vulnerability. There is another dimension that may add an additional perspective to risk analysis called resilience. Resilience is the capacity to cope with unanticipated dangers after they have become manifest, learning to bounce back. This construct is borrowed from Ecology where the resilience of an ecological system is a measure of its ability to maintain its self-organization without undergoing the irreversible change involved in crossing the threshold between stability domains (Holling, 1973). Both vulnerability and resilience represent the protective ability of the firm to cope with adversities associated with its projects. We intend to explore this risk dimension in subsequent studies.

Tables and Figures

Table 1. Market-Based Assets as Corporate Buffers

Unpredictability from Macro-environment

Source	**Effect on**	**Market-Based Assets to enable response**	**Result**	**Relevant Literature**
Economic Recessions Financial "bear" markets	Resilience	Brand Equity Customer relationships	Ability to insulate or minimize the negative effect Improvements in reputation result in reductions in cost of equity capital and increases in firm value Faster recovery than competitors	(Srivastava, McInish, Woods and Capraro, 1997)
Emergence of new technology or radical new products	Vulnerability	Participation in Networks Customer relationships	Ability to wait until uncertainty is reduced	**NA**
Interest Change Rate	Volatility	Brand Equity Customer relationships	Decreased price sensitivity Cross-selling other products and complementary services	Comanor and Wilson (1979) Erdem et al (2002) Simon (1979)

Unpredictability at the Industry Level

Source	**Effect on**	**Market-Based Assets to enable response**	**Result**	**Relevant Literature**
Aggressive Price Promotions	Volatility	Brand Equity	Asymmetric effect of promotions: valuable brands are less affected by competitive price promotions	Blattberg et al (1995) Jedidi et al (1999)
Ebb and flow of industry sales	Volatility	Customer Relationships	Sales are more stable for firms having long-term relationships Customer Satisfaction is a driver of market share	Rust and Zahorik (1993) Kalwani and Narayandas (1995)

Source	Effect on	Market-Based Assets to enable response	Result	Relevant Literature
Consumers' changing needs	Vulnerability	Intellectual Assets: market information coming from relationships	Firms with high market orientation exhibit superior responsiveness in turbulent environments	Slater and Naver (1994) Jaworsli and Kohli (1993) Atuheme-Gima (1995)
New products launched 7by competitors	Vulnerability/ Resilience	Channel Relationships Customer Relationships Brand Equity	Consumers are less likely to engage in brand switching when links such as brand affect and brand trust are created Increased trust and cooperation between manufacturers and distributors represent a barrier to new entrants Incumbents' marketing advantage is the strongest predictor of response success	Chaudhuri and Holbrook (2001) Batra and Ray (1986) Anderson and Narus (1990) Gatignon et al (1997)
Stability of future demand	Vulnerability	Customer Relationships Brand Equity	Satisfaction is key to predict the duration of provider-customer relationships and its impact on performance Cross and up-selling	Bolton (1998) Rust et al (2000) Ittner and Larcker (1998)
Success of firms' new products	Vulnerability	Customer Relationships Brand Equity	Brand extensions facilitate market entry by obtaining greater levels of trial (initial market share) with less investment than would be needed to introduce a new brand	Smith and Park (1992) (Lane and Jacobson 1995)
Low Prices in the industry	Vulnerability	Brand Equity	Differentiation insulates the firm from price competition Satisfaction decreases price elasticities Consumers will pay a reasonable price premium for national brands even if they perceive no difference in quality	Boulding et al (1994) Anderson and Sullivan (1993) Sethuraman (2000) Erdem et al (2002)

Unpredictability at the Industry Level (Contd.)

Source	Effect on	Market-Based Assets to enable response	Result	Relevant Literature
Changes in channels structure and practices (such as Internet, JIT, slotting allowances)	Vulnerability	Brand Equity Customer Relationships Channel Relationships	Final winners in Internet seem to be incumbents with previous strong customer relationships. JIT adopting firms with a diffuse customer base have a superior ROA response than firms with a high degree of customer concentration Slotting allowances are related to the retailer's effort required to push the product (this is lower for strong brands)	Balakrishnan et al (1996) (negative evidence) Lariviere and Padmanabhan (1997)
Increased advertising expenditures by competitors	Vulnerability	Brand Equity Customer Relationships	Strong brands require proportionally less promotional budgets than weak brands because of word-of-mouth effects	Anderson (1998) Danaher and Rust (1996) Zeithaml et al (1996)

Unpredictability at the firm level

Source	Effect on	Market-Based Assets to enable response	Result	Relevant Literature
Temporary drop in sales	Volatility	Brand Equity	High-quality brands will gain more in a price reduction than low-quality brands	Sivakumar and Raj (1997)
High break-even point	Vulnerability	Brand Equity Customer Relationhips	Strong brands generate higher margins (in fact, calculations of the profit are used in brand valuation)	Aaker (1996) Reichheld and Sasser (1990) Reichheld (1996) Reinartz and Kumar (2000) (negative evidence)

Unpredictability at the firm level (Contd.)

Source	Effect on	Market-Based Assets to enable response	Result	Relevant Literature
Uncertain results from R&D projects to generate new products	Vulnerability	Alliance Partners	Project's downside risk is limited Acquisition of existing brands to mitigate risks	Robinson (2001) Houston and Johnson (2001) Burgers et al (1993) Mahajan, Rao and Srivastava (1994)
Uncertain growth in new markets	Vulnerability	Alliance Partners	Brand alliances permit access to new markets and transfer some attributes (such as affect) Cross and Up Selling	Rao et al (1999)
Problems in perceived quality	Vulnerability	Brand Equity Customer Relationhips	Satisfaction decreases the chances customers will defect even if quality falters Consumers in loyalty programs overlook negative evaluations of the company compared to competitors. Complaint management can be an effective formula for customer retention	Anderson and Sullivan (1993) Bolton et al (2000) Fornell and Wernerfelt (1988) Narayandas and Bowman (2001)
Marketing Crisis (i.e. Tylenol poisoning)	Resilience	Brand Equity	Faster recovery than competitors facing the same event	Deighton. John "McNeil Consumer Products Company: Tylenol" Case, University of Chicago Graduate School of Business

Table 2: Variable Definitions

Variable:	**Variable Description**	**COMPUSTAT Annual Data Item:**	**Literature**
Book Debt	Total Assets-Book Equity	Data#6 - Book Equity	Baker and Wurgler (2002)
Book Equity	Total Assets - [Total Liabilities + Preferred Stock] + Deferred Taxes + Convertible Debt	Data6 - [Data181 + Data10]+ Data35 + Data79	Baker and Wurgler (2002)
Cash Flow	Cash Flow	Lagged Data #13 – Data#16- - Δ Data35 - Data #15 – - Data #19 - Data #21	Brush et al (2000)
Cash Flow/Assets	Cash Flow /Assets	Cash Flow/Data# 6	Lehn and Poulsen (1989)
Financial Leverage	Book Debt / Total Assets	Book Debt / Data6	Baker and Wurgler (2002)
Firm Size for options hypothesis	Natural logarithm of total assets	Log(Data#25 * Data#199)	Rajan and Zingales (1995
Firm Size for volatility hypothesis	Natural logarithm of market capitalization	Log(Data#6)	Sorensen (2002)
Market Equity	Common Shares Outstanding * Price	Data#25 * Data#199	Baker and Wurgler (2002)
Market to Book Ratio	Market Equity/ Book Equity	Market Equity/ Book Equity	
Operating Leverage	Fixed Assets/Total Assets	(Data# 6- Data#4)/ Data#6	Sorensen (2002)
Unpredictability	Coefficient of Variation of the times series of firms' sales	CV(Data#2)	Almazan and Molina (2004)

Table 3 Distribution of Firms by Industry

Industry Clasification	Definition	Frequency	Percentage
34	Business Services	58	6.69%
44	Banking	56	6.46%
42	Retail	53	6.11%
45	Insurance	46	5.31%
40	Transportation	44	5.07%
31	Utilities	42	4.84%
30	Petroleum	38	4.38%
41	Wholesale	35	4.04%
23	Automobiles	32	3.69%
35	Computers	32	3.69%
32	Communication	28	3.23%
2	Food	25	2.88%
43	Restaraunts, Hotels	25	2.88%
14	Chemicals	24	2.77%
38	Business Supplies	24	2.77%
36	Electronic	23	2.65%
9	Consumer Goods	22	2.54%
47	Trading	21	2.42%
19	Steel	20	2.31%
10	Apparel	18	2.08%
13	Pharmaceutical	15	1.73%
7	Entertainment	14	1.61%
8	Books	14	1.61%
17	Construction Materials	14	1.61%
21	Machinery	14	1.61%
16	Textiles	13	1.50%
18	Construction	13	1.50%
15	Rubber	11	1.27%
24	Aircraft	10	1.15%
4	Beer	9	1.04%
12	Medical Equipm	9	1.04%
22	Electrical	9	1.04%
37	Measuring	9	1.04%
48	Miscellaneous	8	0.92%
11	Healthcare	5	0.58%
1	Agriculture	4	0.46%

Industry Clasification	Definition	Frequency	Percentage
3	Soda	4	0.46%
5	Smoke	4	0.46%
27	Precious	4	0.46%
39	Shipping Containers	4	0.46%
25	Shipbuilding,	4	0.46%
28	Non-Metallic Mining	3	0.35%
6	Toys	2	0.23%
26	Defense	2	0.23%
33	Personal Services	2	0.23%
29	Coal	1	0.12%
20	Fabricated	0	0.00%
46	Real Estate	0	0.00%
	Total	867	100.00%

Table 4: Descriptive Statistics

Variable	Mean	S.D.	Min	Max
Advertising Capital (Million $)	2.36	3.04	0	8.74
Advertising (Million $)	1.82	2.01	0.00	8.22
ROA	0.04	0.08	-1.21	0.57
Cash Flow/ Assets	0.07	0.07	-1.24	2.54
Log (Mkt-to-Book)	0.44	0.47	-0.83	2.29
Debt to Asset ratio	2.43	36.23	0	1721.89
Operating Leverage	0.33	0.23	0.00	0.96
Log (Assets) (Million $)	8.13	1.57	0.69	13.87
CV Industry Total Sales	0.28	0.11	0.10	0.84

Table 5. Descriptive Statistics for Panel Data

Variable		Mean	Std. Dev.	Min	Max	Observations
Advertising Capital (Million $)	overall	2.36	3.04	-9.53	8.74	N = 3081
	between		3.04	-6.54	8.61	n = 576
	within		0.79	-3.47	6.78	T-bar = 5.3489
Advertising (Million $)	overall	1.82	2.01	0.00	8.22	N = 6555
	between		1.85	0.00	7.84	n = 665
	within		0.78	-3.77	6.12	T-bar = 9.8571
ROA	overall	0.04	0.08	-1.21	0.57	N = 8180
	between		0.05	-0.35	0.45	n = 811
	within		0.06	-1.08	0.59	T-bar = 10.086
Cash Flow/Assets	overall	0.07	0.07	-1.24	2.54	N = 7224
	between		0.04	-0.29	0.33	n = 752
	within		0.06	-1.04	2.51	T-bar = 9.6064
Log (M-to-Book)	overall	0.44	0.47	-0.83	2.29	N = 6987
	between		0.42	-0.33	2.02	n = 724
	within		0.25	-0.98	1.78	T-bar = 9.651
Debt to Asset ratio	overall	2.43	36.23	-1286.69	1721.89	N = 7138
	between		18.81	-105.36	434.40	n = 720
	within		33.28	-1178.90	1385.77	T-bar = 9.91389
Operating Leverage	overall	0.33	0.23	0.00	0.96	N = 6792
	between		0.23	0.00	0.90	n = 801
	within		0.06	-0.31	0.65	T-bar = 8.4794
Log (Assets) (Million $)	overall	8.13	1.57	0.69	13.87	N = 7224
	between		1.51	1.72	12.69	n = 752
	within		0.57	3.64	12.17	T-bar = 9.60638
CV Industry Total Sales	overall	0.28	0.11	0.10	0.84	N = 7007
	between		0.10	0.15	0.74	n = 876
	within		0.04	0.13	0.58	T-bar = 7.99886

Table 6. Correlation between Variables

Variable	1	2	3	4	5	6	7	8	9
1. Advertising Capital	1.000								
2. Advertising	**0.882***	1.000							
3. ROA	**0.136***	**0.118***	1.000						
4. Cash Flow/ Assets	**0.080***	**0.104***	**0.197***	1.000					
5. Log (Mkt-to-Book)	**0.239***	**0.214***	**0.466***	**0.217***	1.000				
6. Debt to Asset Ratio	0.006	-0.004	**-0.024****	**-0.036***	**-0.030***	1.000			
7. Operating Leverage	-0.027	-0.008	-0.006	**0.111***	**-0.143***	**-0.037***	1.000		
8. Log (Assets)	**0.344***	**0.411***	-0.002	**-0.057***	**-0.109***	**0.047***	**0.059***	1.000	
9. CV Ind. Total Sales	0.018	**0.049***	**0.090***	**0.071***	**0.287***	-0.010	**-0.046***	0.015	1.00

* denotes $p<0.001$, and ** $p<0.05$

Table 7. Results of the Heteroskedasticity Model

	Mean			Variance		
Variable	**ROA**	**Cash Flow/Assets**	**Cash Flow/Assets**	**ROA**	**Cash Flow/Assets**	**Cash Flow/Assets**
Financial Leverage	-.0000977 (.0000636)	**-.000085***** (.0000263)	**.000368***** (.0000886)	**-.008351***** (.0012851)	-.0004268 (.0005883)	**-.0033306***** (.001287)
Operating Leverage	-.0132902 (.0061088)	**.0248926***** (.0033497)	**.0328223***** (.0057041)	**-1.63376***** (.1388035)	-.4638178 .0867088	**-.4988154***** (.001287)
Firm Size	**.014548***** (.0009634)	**.0035141***** (.0004559)	.00081 (.008204)	**-.200856***** (.0186074)	**-.2134162***** (.0112595)	**-.1611018***** (.0189367)
Advertising Capital	**.002390***** (.0005737)		**.0020667***** (.0004964)	**- .07091***** (0.102668)		**-.0814294***** (.0108974)
Akaike Information Criterion	5554.16	15355.478	6498.168	5554.16	15355.478	6498.168

Parameters estimates (std. Error); *** denotes p<0.01, ** p<0.05 and * p<0.10

@ advertising capital has a significant positive relationship with the mean of both Cash Flow/Assets and Return on Assets, whereas advertising capital has a significant negative relationship with the variance of both Cash Flow/Assets and Return on Assets. These results fail to reject hypotheses H1 and H2

Table 8. Results of the Fixed-Effects Model Cash Flow/Assets

Variable	**Only Control Variables Column 1**	**Hypotesized Model Column 2**
Advertising Capital		**.0039471**** (.0015725)
Financial Leverage	-.000033 (.0000225)	-0.0000266 (.0000544)
Operating Leverage	**.0639913***** (.0126128)	**.120283***** (.0279012)
Firm Size	**.0073527***** (.0010508)	.00184 (.00239968)
Firm-year spells	5340	2120
Within R^2	0.0144	0.0148

Parameters estimates (std. Error); *** denotes p<0.01, ** p<0.05 and * p<0.10

@ showing that advertising capital to have a significant positive relationship with the mean of Cash Flow/Assets. These results fail to reject hypothesis H1.

Table 9. Results of Generalized Estimating Equations Cash Flow/Assets

Variable	**Only Control Variables Column 1**	**Hypotesized Model Column 2**
Advertising Capital		**.0013444*** (.0007109)
Financial Leverage	-.0000417 (.0000428)	-.0000685 (.0000361)
Operating Leverage	**.0324185***** (.0071454)	**.0306867 ***** (.0093712)
Firm Size	**.004176***** (.0013284)	-.0001322 (.0012982)
Firm-year spells	4996	2020
χ^2	28.09	17.50

Parameters estimates (std. Error); *** denotes p<0.01, ** p<0.05 and * p<0.10

@ showing that advertising capital has a significant positive relationship with the mean of Cash Flow/Assets. These results fail to reject hypothesis H1.

Table 10. Results of the Mixed Model for Cash Flow/Assets

Firms nested within industries. Autoregressive Variance Structure

Variable	**Only Control Variables Column 1**	**Hypotesized Model Column 2**
Advertising Capital		**.001122***
		(.000492)
Financial Leverage	**-0.00008****	**-.00014 ***
	(0.000035)	(.000058)
Operating Leverage	**0.03494*****	**.02699 *****
	(0.004385)	(.0093712)
Firm Size	**0.004966*****	.002175
	(0.000549)	(.000863)
Firms	648	451
Akaike Information Criterion	-11315.1	-5588.2

Parameters estimates (std. Error); *** denotes p<0.01, ** p<0.05 and * p<0.10

@ showing that advertising capital to have a significant positive relationship with the mean of Cash Flow/Assets. These results fail to reject hypothesis H1.

Table 11. Comparison of Estimated Models: Cash Flow/Assets

Variable	Regression Coeffcient	Standard Error	P value
Multiplicative Heteroscedasticity	.0020667	(.0004964)	0.000
Fixed Effects	.0039471	(.0015725)	0.012
Generalized Estimating Equations	.0013444	(.0007109)	0.059
Mixed Model Firms nested within industries	.001122	(.000492)	0.039

@ showing the consistency of results among different estimation approaches, indicating the robustness of results. In all the cases, results fail to reject hypothesis H1.

Table 12. Results of the Fixed Effects Model for Log(Market to Book)

Variable	**Only Control Variables**	**Hypotesized Model**	**Interaction with Environmental Unpredictability**
	Column 1	**Column 2**	**Column 3**
Advertising Capital		**.0137286****	**-.0080721***
		(.0063522)	(.0132252)
Environmental Unpredictability			-.2836317
			(.1721146)
Environmental Unpredictability x Advertising Asset			**.0694745***
			(.036721)
Financial Leverage	-.0000628	-.0000996	-.0252496
	(.0001098)	(.0002172)	(.1179131)
Operating Leverage	**-.1721596*****	-.0160552	-.0252496
	(.0627215)	(.1178344)	(.1179131)
Firm Size	**-.059736*****	**-.1887946*****	**-.1880806*****
	(.007058)	(.0178723)	(.0181014)
Firm-year spells	5311	2099	2099
Within R^2	0.0154	0.0705	0.0730

Parameters estimates (std. Error); *** denotes p<0.01, ** p<0.05 and * p<0.10

@ showing that advertising capital has a significant positive relationship with the Log (Market-to-Book ratio). These results fail to reject hypothesis H3.
Additionally, the third column shows how the positive relationship between advertising capital and the Market-to-Book ratio is enhanced when the firm operates in highly unpredictable environments. These results fail to reject hypothesis H4.

Table 13. Results of Generalized Estimating Equations Log(Market-to-Book)

Variable	**Only Control Variables Column 2**	**Hypotesized Model Column 1**	**Interaction with Environmental Unpredictability Column 3**
Advertising Capital		**.0222352***** (.0051432)	-.0003228 (.010283)
Environmental Unpredictability			-.0325047 (.0391368)
Interaction Environmental Unpredictability x Advertising			**.0735448***** (.028302)
Asset Financial Leverage	-.0001179 (.0000946)	-.000176 (.0001726)	-.0001736 (.0001749)
Operating Leverage	**-.2102551***** (.0483996)	**-.1956155***** (.0752515)	**-.2018119**** (.0751762)
Firm Size	**-.0794857** *** (.0076732)	**-.0989685***** (.0126779)	**-.0980698***** (.0126205)
Firm-year spells	4873	1965	1965
χ^2	122.71	71.76	77.48

Parameters estimates (std. Error); *** denotes p<0.01, ** p<0.05 and * p<0.10

@ showing that advertising capital has a significant positive relationship with the Log (Market-to-Book ratio). These results fail to reject hypothesis H3.Additionally, the third column shows how the positive relationship between advertising capital and the Market-to-Book ratio is enhanced when the firm operates in highly unpredictable environments. These results fail to reject hypothesis H4.

Table 14. Mixed Model for Log(Market to Book).

Firms nested within industries

Variable	**Only Control Variables Column 1**	**Advertising Capital Column 2**	**Interaction with Environmental Unpredictability Column 3**
Advertising Capital		**.04723*** **	.007109
		(.003654)	(.01079)
Environmental Unpredictability			**-.2930 ***
			(.1431)
Interaction Env. Unpredictab x Advertising Asset			**.07188***
			(.0390)
Financial Leverage	**-0.00048***	**-**	-.00010
	(0.000262)	**0.03913*** **	(.000219)
		(0.007765)	
Operating Leverage	**-0.3192*** **	**-0.2655*** **	-.08997
	(0.03342)	(0.04945)	(.07559)
Firm Size	**-0.01442****	**-.03932*** **	**-.1082*** **
	(0.004978)	(.007766)	(.01169)
Firms	663	455	455
Akaike Information	5639.8	2891.2	2643.9

Parameters estimates (std. Error); *** denotes p<0.01, ** p<0.05 and * p<0.10

@ showing that advertising capital to have a significant positive relationship with the log (Market-to-Book ratio). These results fail to reject hypothesis H3. Additionally, the third column shows how the positive relationship between advertising capital and the log (Market-to-Book ratio) is enhanced when the firm operates in highly unpredictable environments. These results fail to reject hypothesis H4.

Table 15. Results of the Heteroskedasticity Model

	Mean		Variance	
Variable	**Only Control Variables Column 1**	**Hypotesized Model Column 2**	**Only Control Variables Column 1**	**Hypotesized Model Column 2**
Financial Leverage	**-.366729***** (.0263079)	**-.0024775***** (.0006984)	**-.000892***** (.0005888)	**-.003919***** (.0012917)
Operating Leverage	**-.025275***** (.0041801)	**-.3929965***** (.0418298)	**-1.16735***** .087081	**-1.34181***** (.1426562)
Firm Size	**-.366729***** (.0263079)	**-.0581264***** (.0074599)	**-.03822***** (.0128266)	**-.1476134***** (.0222026)
Advertising Capital		**.0457115***** (.0030655)		**.0943054***** (.0105974)
Akaike Information Criterion	2772.068	2448.75	2772.068	2448.75

Parameters estimates (std. Error); *** denotes p<0.01, ** p<0.05 and * p<0.10

@ showing advertising capital has a significant positive relationship with the mean of Log(Market to Book ratio). Additionally advertising capital has a significant positive relationship with the variance of Log(Market to Book ratio). These results reject hypotheses H5.

Table 16. Comparison of Estimated Models: (Market to Book ratio)

Variable	Regression Coeffcient	Standard Error	P value
Multiplicative Heteroscedasticity	.0457115	.0030655	0.000
Fixed Effects	.0137286	.0063522	0.031
Generalized Estimating Equations	.0222352	.0051432	0.000
Mixed Model Firms nested within industries	.04723	.003654	0.0201

Parameters estimates (std. Error); *** denotes $p<0.01$, ** $p<0.05$ and * $p<0.10$

@ showing the consistency of results among different estimation approaches, indicating strong robustness of results. In all the cases, results fail to reject hypothesis H3.

Table 17. Correlation Matrix of Market Based Assets

Variable	1	2	3	4	5	6
1.Advertising Capital	1.000					
2. Log (Mkt-to-Book)	**0.239** ***	1.000				
3. ACSI	**0.103** ***	**0.343** ***	1.000			
4. Fortune	**0.181** ***	**0.438** ***	**0.302** ***	1.000		
5. Fortune (financial halo removed)	**0.098****	**0.089****	**0.326** **	**-0.891** ***	1.000	
6. Volatility Cash Flow/Asset in the following 3 years	**-0.103****	**0.061****	**-0.169****	**-0.126****	**-0.123****	1.00

Parameters estimates (std. Error); *** denotes p<0.01, ** p<0.05 and * p<0.10

@ showing strong correlations among different market-based assets. The variable Fortune corresponds to the Fortune Reputation Index. Fortune (financial halo removed) corresponds to the residuals obtained after regressing Fortune on ROA, Financial Leverage, Market-to-Book ratio and Sales lagged one year. Additionally, this table show significant correlations between market-based assets and financial performance indicators in the expected direction

figure 1. Financial impact of advertising investments

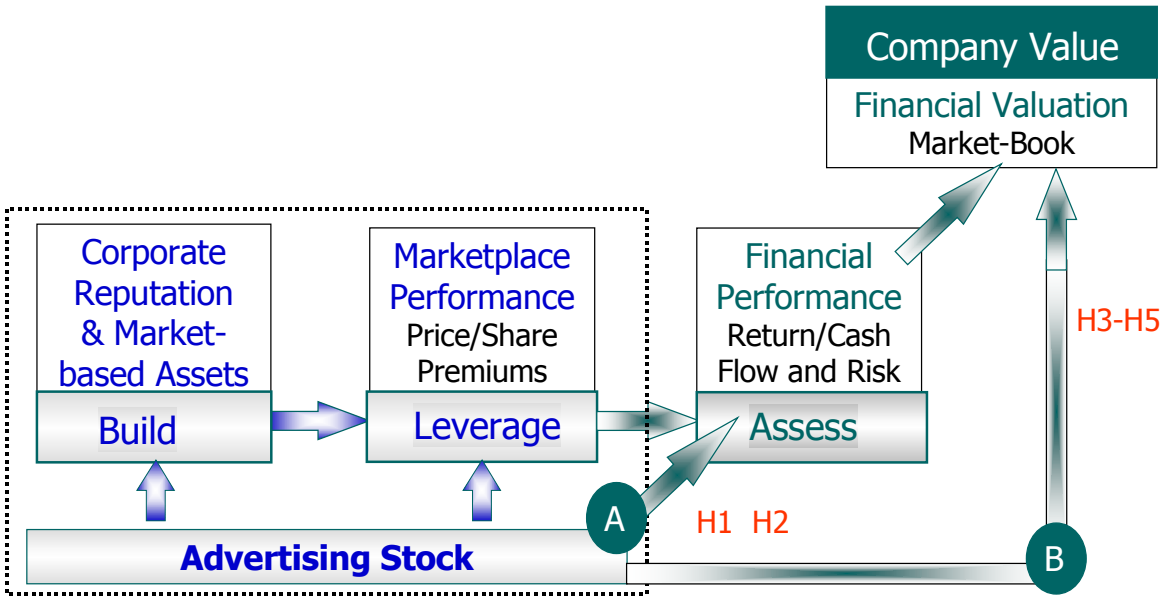
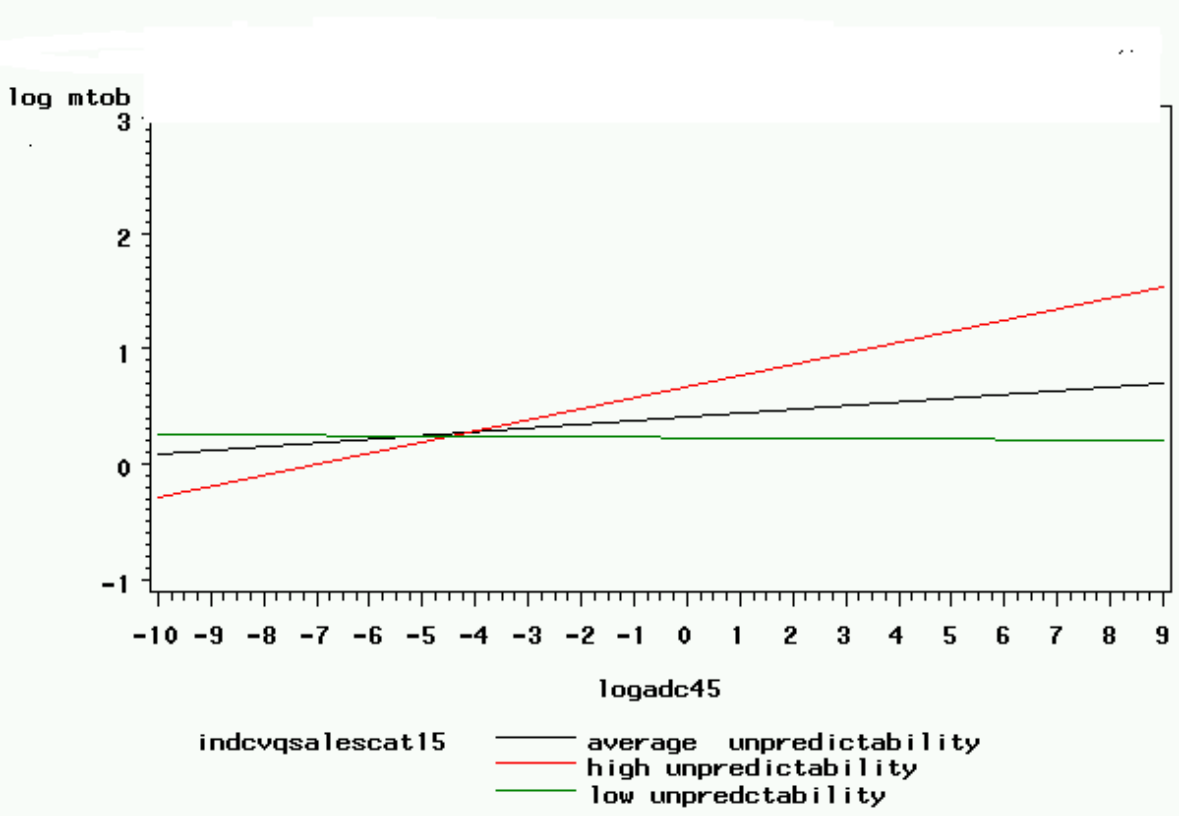


figure 2. interaction effect of advertising asset and industry unpredictability on log(market-to-book)



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